Paper 91

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UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

THOMAS COOLIDGE AND MARIO EHLERS
Junior Party
(Patent No. 6,284,725),
v.
SUAD EFENDIC,
Senior Party
(Application No. 09/400,802).

Patent Interference No. 105,457 (MPT)
(Technology Center 1600)

MEMORANDUM OPINION and ORDER
Decision on Motions

Before: RICHARD TORCZON, SALLY GARDNER LANE,[1] and MICHAEL P. TIERNEY, *Administrative Patent Judges*.

Opinion concurring in part and dissenting in part by TORCZON, *Administrative Patent Judge*.

Opinion for the Board filed by TIERNEY, *Administrative Patent Judge*.

This interference is before a motions panel for a decision on preliminary motions. An oral argument took place in this interference, a

[1] Administrative Patent Judge (APJ) Teddy S. Gron participated in the oral argument but was unavailable to participate in this Decision. In this Decision, APJ Sally Gardner Lane has replaced APJ Gron.

transcript of which appears in the record. (Paper 90). Representing Junior Party Coolidge was Steven Kelber. Senior Party Efendic was represented by Herbert Hart, III.

I. Introduction

This interference is directed to methods involving the administration of glucogen-like-peptide-1 ("GLP-1"), stimulates insulin secretion. Both parties claim the administration of an effective amount of GLP-1 to an individual in need thereof. Coolidge's claims are directed to administration of GLP-1 for the stated purpose of amelioration of organ tissue injury caused by reperfusion of blood flow following a period of ischemia whereas Efendic's claims are directed to a method of treating stroke.

There are eleven (11) motions awaiting decision. Efendic has filed three (3) substantive motions and Coolidge has filed seven (7). Additionally, Coolidge has filed a miscellaneous motion to exclude certain testimony. (Coolidge Miscellaneous Motion 2, Paper 79).[2]

Coolidge requests a determination of no interference-in-fact. (Coolidge Motion 1, Paper 30). Additionally, Coolidge filed four motions requesting judgment based on the alleged unpatentability of Efendic's involved claims due to noncompliance with 35 U.S.C. § 112, 1st and 2nd paragraph and § 135(b). (Coolidge Motions 2-5, Papers 31-34). Coolidge has also filed a motion to substitute a count and a motion attacking Efendic's

[2] Coolidge Miscellaneous Motion 1 (Paper 38) is not "pending." The motion was authorized by the Board in Order, Paper 20, as a way of allowing Coolidge to formally notify and provide the Board and Efendic with copies of potential prior art references. The references have been filed and entered into the record. No further action is required on the miscellaneous motion. (Paper 20, p. 5, ll. 10-12).

accorded priority benefit. (Coolidge Motions 7-8, Papers 35-36). In contrast, Efendic has filed a motion for judgment based on prior art and a motion attacking Coolidge's accorded priority benefit. (Efendic Motions 1-2, Papers 25-26). Efendic also filed a responsive motion that seeks to add a new claim should the Board grant Coolidge's § 135(b) motion. (Paper 40).

As explained in detail below, we have denied Coolidge's motions for no interference-in-fact and unpatentability based on § 135(b). We have granted Coolidge's motions for lack of sufficient enablement and written description. We denied Coolidge's miscellaneous motion to exclude evidence and dismissed the remaining Coolidge motions as moot.

We have exercised our discretion and considered Efendic's prior art anticipation motion as the issues raised therein were fully developed on the record and as Efendic's relied upon prior art presented a specification that is similar to that of Efendic's involved '802 application. Efendic's prior art motion is denied for failing to demonstrate with credible and sufficient evidence that Coolidge's claimed method was a natural result flowing from the operation of the cited prior art. Efendic's remaining motions are dismissed as moot.

II. Background Technology

Hyperglycemia is a condition in which there is an abnormally high concentration of glucose in the blood and is generally associated with diabetes. Efendic's specification discloses that previous animal studies support the idea that hyperglycemia significantly worsens brain damage during stroke. Further, both Coolidge and Efendic's specifications disclose prior studies as demonstrating the benefits of an infusion of glucose and insulin for treating diabetic patients during acute myocardial infarction.

GLP-1 is a natural gut-derived, insulinotropic polypeptide. GLP-1 is unique in its capacity to simultaneously stimulate insulin secretion and inhibit glucagon release. By stimulating insulin secretion, GLP-1 increases the uptake of glucose from the blood. Unlike insulin, GLP-1 can be administered without the risk of inducing hypoglycemia, which can be a dangerous and life-threatening condition. (*See, e.g.*, EX 1032, ¶¶ 22-27).

Ischemia refers to reduced blood flow. A consequence of ischemia is cellular damage to aerobic organ tissue. According to Coolidge, much of the tissue damage occurs upon the resumption of blood flow (reperfusion) and the re-oxygenation of the previously anoxic tissue. (Coolidge '725, col. 1, ll. 26-28).

Stroke is an acute condition that is caused by a blockage or hemorrhage in the brain's blood supply. A patient suffering a stroke is at risk of death or disability. Strokes can be distinguished as ischemic or hemorrhagic with ischemic accounting for about 85% of strokes and hemorraghic accounting for the rest. The effect of a stroke on a person is complex. In some cases, the stroke causes brain tissue to die, but leaves some vulnerable tissue in the vicinity of the dead tissue. This vulnerable tissue can be saved but time is of the essence in saving the vulnerable brain tissue. (*See, e.g.*, EX 1031, 30-39 and Coolidge Reply 1, Coolidge response to facts ¶¶ 35-39 and 42).

Hyperglycemia is said to exacerbate damage during stroke due to several factors including a reduction in regional cerebral blood flow. (Efendic '802, p. 2, ll. 3-14). Additionally, hyperglycemia has been shown to increase the death rate from reperfusion. (CX 2043, abstract).

III. Findings of Fact

The record supports, by a preponderance of the evidence, the following findings:

A. The Real Parties in Interest

1. Junior Party Coolidge

1) Amylin Pharmaceuticals is the real party in interest in Coolidge's involved U.S Patent 6,284,725. (Coolidge Real Party in Interest, Paper 8).

2. Senior Party Efendic

2) Eli Lilly is the real party in interest for Efendic's involved U.S. Application 09/400,802. (Efendic Real Party in Interest, Paper 4).

B. Accorded Priority Benefit

1. Junior Party Coolidge

3) Coolidge is involved in the interference based upon U.S Patent 6,284,725, which issued on September 4, 2001, based upon U.S. Application 09/302,596, filed April 30, 1999. (Notice Declaring Interference, Paper 1).

4) Coolidge has been accorded an earlier constructive reduction to practice (*i.e.*, benefit for the purpose of priority) based on the following application:

U.S. Provisional Application No. 60/103,498, filed **October 8, 1998** (*Id.* at 5).

2. Senior Party Efendic

5) Efendic is involved in this interference based upon U.S. Patent Application 09/400,802, filed September 22, 1999. (*Id.* at 4).

6) Efendic has been accorded an earlier constructive reduction to practice based on the following application:

U.S. Provisional Application 60/101,719, filed **September 24, 1998**. (*Id.* at 5).

C. The Count and Claim Correspondence

7) There is a single count in the interference, Count 1, which reads as follows:

A method according to claim 1 of U.S. Application 09/400,802 or claim 2 of U.S. Patent No. 6,284,725.

(*Id.*).

8) Claim 1 of Efendic's '802 application reads as follows:

> A method of treating stroke, comprising administering an effective amount of a compound selected from the group consisting of GLP-1, GLP-1 analogs, GLP-1 derivatives, and pharmaceutically-acceptable salts thereof, to a patient in need thereof.

(Efendic Clean Copy of Claims, Paper 5).

9) Coolidge '725 patent claim 2 is dependent upon claim 1. '725 claims 1 and 2 read as follows:

> 1. A method for amelioration of organ tissue injury caused by reperfusion of blood flow following a period of ischemia,

which comprises:

administering to an individual in need of such treatment an effective amount of a composition which includes a compound which binds to a receptor for glucagon-like-peptide-1 in a pharmaceutical carrier.

2. The method of claim 1 wherein the glucagon-like-peptide-1 is GLP-1 or a biologically active analogue thereof.

(Coolidge Clean Copy of Claims, Paper 11).

10) The claims of the parties are:

Coolidge '725: 1-13

Efendic '802: 1-11

(Paper 1, p. 5).

11) All of the claims of the parties correspond to Count 1. (*Id.*).

D. Efendic's '802 Specification

12) Efendic's specification states that its "invention relates to methods and compositions for reducing mortality and morbidity after stroke by controlling hyperglycemia." ('802 Specification, CX 2001, p. 1, ll. 6-7).

13) Efendic defines the term stroke as a cerebrovascular disease that is characterized by an abrupt onset of a non-convulsive and focal neurological deficit. (*Id.* at p. 5, ll. 1-3).

14) Efendic identifies the timing of the inventive treatment as follows:

A diagnosis of "stroke" is one involving medical judgment. The treatment which is the subject of this invention is generally

given to a person during the acute phase of a stroke.

(*Id.* at p. 23, ll. 29-31).

15) Efendic's specification defines the patient to be treated with the GLP-1 compounds as follows:

> A patient in need of the compounds used in the present invention is one who is in the acute phase of stroke, and who also is incapable of auto-regulation of blood glucose. A patient is incapable of auto-regulation if that patient: (1) was previously diagnosed with insulin-dependent diabetes (IDDM) or non-insulin dependent diabetes (NIDDM), according to the definitions of the National Diabetes Data Group (Diabetes, 1979); (2) has a blood glucose level greater than 11 mmol/liter, even without a previous diagnosis of diabetes; or (3) has an abnormal glucose tolerance.

(*Id.* at p. 23, line 32 to p. 24, line 5).

16) Efendic's methods and compositions are said to be effective in reducing mortality and morbidity after stroke in diabetic patients through the use of glucagon-like peptide 1, and analogs and derivatives thereof. (*Id.* at p. 4, ll. 27-30).

17) Efendic states that prior studies in animals strongly support the idea that hyperglycemia significantly worsens brain damage during stroke. (*Id.* at p. 2, ll. 9-14).

18) Efendic states that previous studies demonstrate that a regime of insulin treatment for diabetic patients during acute myocardial infarction lowered mortality during the following years as compared to a control group. (*Id.* at p. 2, ll. 15-21).

19) Efendic describes the risks and burdens inherent in insulin infusion and concludes that an alternative approach to managing blood glucose during acute stroke in diabetics is needed. (*Id.* at p. 3, ll. 1-8).

20) Efendic states that the incretin hormone, glucagon-like peptide 1 "GLP-1" enhances nutrient-induced insulin release. (*Id.* at p. 3, ll. 9-11).

21) Efendic states that the use of GLP-1 type molecules for prolonged therapy of diabetes has been hindered due to the short serum half-life of such peptides, *e.g.*, GLP-1 is said to have a half life of only 3 to 5 minutes. (*Id.* at p. 3, ll. 22-27).

22) Efendic contends that its GLP-1 treatments avoid the problems associated with insulin treatment such as the "ever present risk of hypoglycemia that accompanies insulin infusion." (*Id.* at p. 4, ll. 5-6).

23) Efendic defines GLP-1 as GLP-1 (7-37), which said to have a well known amino acid sequence, and which is:

NH_2-His^{7}-Ala-Glu-Gly^{10}-Thr-Phe-Thr-Ser-Asp^{15}-Val- Ser-Ser-Tyr-Leu^{20}-Glu-Gly-Gln-Ala-Ala^{25}-Lys-Glu- Phe-Ile-Ala^{30}-Trp-Leu-Val-Lys-Gly^{35}-Arg-Gly^{37}-COOH

(*Id.* at p. 5, ll. 28-34 through p. 6, ll. 1-2).

24) A "GLP-1 analog" is defined by Efendic as a molecule having a modification including one or more amino acid substitutions, deletions, inversions, or additions when compared with-GLP-1. (*Id.* at p. 6, ll. 3-5).

25) A "GLP-1 derivative" is defined by Efendic as a molecule having the amino acid sequence of GLP-1 or of a GLP-1 analog, but additionally having at least one chemical modification of one or more of its amino acid side groups, α-carbon atoms, terminal amino group, or terminal carboxylic acid group. (*Id.* at p. 6, ll. 12-15)

26) Efendic states that the GLP-1 analogs and derivatives that are useful for the invention are those "with an increased half-life compared to GLP-1 and the ability to effect mortality and morbidity when administered to a subject." (*Id.* at p. 4, ll. 30-32).

27) Efendic also states that GLP-1 analogs and derivatives are suitable for the invention "as long as the active fragment that effects reduced mortality or morbidity after stroke is included." (*Id.* at p. 5, ll. 25-27).

28) Efendic's specification does not provide a specific structure for the active fragment that forms a part of the GLP-1 analogs and derivatives.

29) Efendic's specification provides a lengthy listing of GLP-1 substitutions and modifications, most of which are identified as preferred GLP-1 analogs and derivatives. (*Id.* at p. 6, l. 26 through p. 15, l. 9).

30) Efendic's preferred GLP-1 analogs and derivatives include peptides having one or more substitutions at positions 7-10, 15, 16, 18, 21, 22, 23, 24, 26, 31, 34, 36. (*Id.*).

31) Efendic's GLP-1 analogs and derivatives are also said to include fragments of GLP-1 that are insulinotropic and derivable from a naturally occurring amino acid sequence. (*Id.* at p. 12, ll. 20-22).[3]

32) Efendic states that:

> Alterations to a precursor GLP-1 or GLP-1 amino acid sequence to produce a desired GLP-1 analog or GLP-1 derivative, or active fragment thereof, are made by well-known methods: chemical modification, enzymatic modification, or a combination of chemical and enzymatic modifications.

(*Id.* at p. 18, ll. 27-30).

33) Efendic states that the effective dose of GLP-1, GLP-1 analog or GLP-1 derivative will depend upon a number of factors. Specifically, Efendic states that:

> The dose of GLP-1, GLP-1 analog, or GLP-1 derivatives, or active fragments effective in an particular subject to reduce mortality and morbidity due to stroke will depend on a number of factors, among which are included the subject's sex, weight and age, stroke severity, stroke subtype, the route of administration and bioavailability, the persistence of the administered compound in the body, the formulation, and the potency.

(*Id.* at p. 23, ll. 5-9).

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[3] Efendic's specification identifies specific peptide fragments that are said to be suitable for practice in the invention. The specification however, cites U.S. Patent 5,188,666 as describing these insulinotropic peptide fragments. ('802, CX 2001, p. 12, ll. 7-8 and 20-21). While not mentioned by either party, the 5,188,666 patent relates to paint removing compositions and methods and not to insulinotropic peptide fragments. (Boccardo, U.S. Pat. 5,188,666 "Paint Removing Compositions and Methods for the Manufacture and Use Thereof.").

34) Efendic's specification provides two examples. The examples discuss the effects of subcutaneous infusion of GLP-1 (7-36) on blood glucose in persons with non-insulin dependent diabetes. (*Id.* at Examples 1 and 2).

E. Coolidge's '725 Patent

35) Coolidge's '725 patent is based upon U.S. Application 09/302,596, filed April 30, 1999. (EX 1001, front page).

36) Coolidge states that its '596 application is a "continuation-in-part" of U.S. Provisional Application 60/103,498, filed October 8, 1998. (*Id.* at col. 5, ll. 54-58).

37) Coolidge's specification states that the consequences of ischemia-reperfusion events include reversible and irreversible cell damage. (EX 1001).

38) Coolidge '725 cites a 1998 article for the proposition that recent experimental and clinical data establish that ischemia-reperfusion injury is particularly responsive to metabolic therapy with glucose-insulin-potassium "GIK" infusion. (*Id.* at col. 4, ll. 4-11).

39) Coolidge describes GLP-1 as follows:

> GLP-1 is a glucose-dependent insulinotropic hormone that effectively enhances peripheral glucose uptake without inducing dangerous hypoglycemia. Further, GLP-1 strongly suppresses glucagon secretion, independent of its insulinotropic

> action, and thereby powerfully reduces plasma free fatty acid (FFA) levels substantially more than can be accomplished with insulin. High FFA levels have been implicated as a major toxic mechanism during myocardial ischemia.

(*Id.* at col. 3, ll. 56-64).

40) Coolidge describes GLP-1 as unique molecule with a unique therapeutic potential in managing ischemia-reperfusion. Specifically, Coolidge states:

> Whatever the cellular mechanism, GLP-1 is unique in its capacity to simultaneously stimulate insulin secretion and inhibit glucagon release. (*Id.* at col. 6, ll. 9-12).
>
> The dual capacity of GLP-1 to powerfully stimulate insulin release and inhibit glucagon secretion, together with the strict glucose-dependence of its insulinotropic action, endow this molecule with a unique therapeutic potential in the management of ischemia-reperfusion. (*Id.* at col. 6, ll. 16-20).

41) Coolidge states that its GLP-1 treatment will be commenced as early as possible during the post-ischemic period, for example, acute spontaneous ischemia in the home or ambulance context. (*Id.* at col. 12, ll. 8-12).

F. Person of Ordinary Skill in the Art

42) A person of ordinary skill in the art of stroke and reperfusion treatment would be a vascular neurologist in a specialized stroke center with access to human biochemical information including peptide hormone information and those skilled in that area. (CX 2006, ¶ 12, EX 1031, ¶¶ 27-29, EX 1032, ¶¶ 19-21).[4]

[4] The parties dispute whether or not certain declarants meet the high level of

G. Declaration Testimony

The following facts present relevant highlights from Coolidge and Efendic's testifying experts on the issues of no interference-in-fact and § 135(b). Relevant highlights from additional experts on the subjects of enablement, written description and prior art are provided in the sections discussing those subjects.

Coolidge Declarants

1. Testimony of Dr. Mitchell Elkind

43) Coolidge's motion for no interference-in-fact relies upon Dr. Elkind's testimony to support Coolidge's contentions. (Paper 30, Exhibits Relied Upon, p. 9).

44) Dr. Elkind received an M.D. degree from Harvard Medical School and an M.S. in Epidemiology from Columbia School of Public Health. (CX 2006, ¶ 2).

45) Dr. Elkind was an Assistant Professor of Neurology at Columbia University College of Physicians and Surgeons from 1998 through 2006 and is now an Associate Professor of Neurology with tenure. (*Id.* at ¶¶ 2-3).

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skill required to be a person of ordinary skill in this art, i.e., vascular neurologists working in a specialized stroke center. Consistent with our requirement that an expert witness state the underlying basis for opinion, we have considered the testimony of the declarants in light of the technical documents and concrete experience to which those experts have made reference and give little weight to a declarant's unsupported personal knowledge. (Standing Order, Paper 2, ¶ 158.1.1).

46) Dr. Elkind testifies that he is knowledgeable and skilled in the art of treating stroke patients and directs our attention to his CV as evidence of his professional activities. (*Id.* at ¶¶ 7-8).

47) Dr. Elkind's CV identifies his involvement in one hundred and forty one (141) peer reviewed articles, case reports, books and abstracts, many of which relate to stroke. (CX 2006, CV).

48) Dr. Elkind's CV identifies his involvement in eighty-eight lectures, where the lecture topics were generally directed to stroke prevention and treatment. (*Id.*).

49) We find that Dr. Elkind is sufficiently qualified to give testimony with respect to the particular facts and techniques known by the average person working in the field of vascular neurology.

50) The term stroke includes 1) cerebral infarction due to occlusion of a blood vessel with consequent ischemia, and 2) intracranial hemorrhage due to rupture of a blood vessel with subsequent escape of blood into tissues of the brain. (*Id.* at ¶¶ 16-18).

51) Mortality and morbidity are two measures for assessing outcome after a stroke. (*Id.* at ¶ 29).

52) Measures of morbidity generally involve measuring a patient's level of disability or impairment. (*Id.* at ¶ 30).

53) Dr. Elkind generally testifies that there are many different causes of stroke and many different types of stroke treatments. (*Id.* at ¶¶ 41-64).

54) That dosage information was critical to effective treatment of a stroke patient was known at the time of filing of Efendic's '802 application. (Elkind Second Declaration, CX 2015, ¶ 12, citing articles published in *Circulation*, CX 2025 and 2028).

55) Dr. Elkind testifies that developing a dosing regimen for stroke treatment is a complicated process and that Efendic provides little if any guidance as to develop the proper dosing regimen for a stroke patient. (CX 2006, ¶¶ 65-79).

56) Dr. Elkind testifies that the timing of the stroke treatment is an important factor in treating a patient. (*Id.* at ¶¶ 80-94 and CX 2015, ¶¶ 16-17).

57) Dr. Elkind testifies that the relationship between blood sugar and stroke is complex. (*Id.* at ¶¶ 95-117).

Efendic's Declarant

1. Declaration of Dr. Paul Nyquist

58) Efendic's oppositions to Coolidge's motions for no interference-in-fact and § 135(b) rely upon Dr. Nyquist's declaration to support Efendic's contentions. (Papers 47 and 48, Lists of Exhibits).

59) Dr. Nyquist received a B.S. in Psychology and Zoology/Anthropology from the University of Michigan in 1986 and M.D. from George Washington University in 1992. (EX 1031, ¶¶ 3-4).

60) From 1992 to 1996 Dr. Nyquist worked in a variety of positions including: 1) an internship at the national Naval Medical Center, 2) Head of Health Monitoring at the Naval Research Institute, 3) mission support specialist/instructor at the Combat Casualty Care Research Center, and 4) medical practitioner at the Mount Vernon Medical Unit in Mount Vernon, VA. (*Id.* at ¶ 5-7).

61) At the time of Efendic and Coolidge's 1998 and 1999 filing dates, Dr. Nyquist was completing a residency in neurology (1996-1999) at the Mayo Clinic Graduate School of Medicine in Rochester, MN after which he was a fellow (1999-2001) with the National Institutes of Health, National Institute of Neurological Diseases, Stroke Branch. (*Id.* at ¶¶ 9-10).

62) From 2002 to present, Dr. Nyquist has held a variety of positions including Director of a stroke program, neuroscience critical care Fellow, and is now an assistant professor of Neurology, Anesthesiology/Critical Care Medicine at the Johns Hopkins School of Medicine in the Cerebrovascular Division. (*Id.* at ¶¶ 12-17).

63) We find that Dr. Nyquist is sufficiently qualified to give testimony with respect to particular facts and techniques known by the average person working in the field of vascular neurology.

64) A primary focus of treating stroke is maximizing the survival of brain tissue by saving as much vulnerable brain tissue as possible as the more tissue that dies the worse the outcome in terms of mortality and morbidity. (*Id.* at ¶¶ 37-39).

65) Dr. Nyquist testifies that one of ordinary skill in the art would have understood that the terms "reducing mortality and morbidity after stroke" and "treating stroke" to carry the same meaning. (*Id.* at ¶ 41).

66) Dr. Nyquist testifies that the term "treating stroke" encompasses anything done during a stroke to less or control damage to vulnerable brain tissue regardless of the severity of the stroke or the ultimate successfulness of the treatment in a particular circumstance. (*Id.* at ¶¶ 41-42).

67) Dr. Nyquist testifies that a majority of strokes are ischemic in nature with the rest being hemorrhagic. (*Id.* at ¶ 46).

68) Various injuries can accompany a stroke including those caused by reperfusion. (*Id.* at ¶ 54).

69) Dr. Nyquist testifies that treating a reperfusion injury would have been viewed as a treatment of stroke since reperfusion injury is one type of injury that occurs during stroke. (*Id.* at ¶ 55).

70) Hyperglycemia is a condition of having elevated blood glucose levels and a person of skill in the art would have understood hyperglycemia to play a role in injury during stroke and reperfusion. (*Id.* at ¶¶ 60, 66-67, citing

Efendic's involved specification and CX 2043, De Courten-Myers GM, *et al.* "Fatal Strokes in Hyperglycemic Cats." *Stroke*, 1989 Dec. 20(12): 1707-15).

71) Given Efendic's claimed method of treating stroke with GLP-1, one of ordinary skill in the art "would have understood that a mechanism by which treatment could be occurring would be through mitigation of reperfusion injury with GLP-1 since hyperglycemia was thought to play a role in reperfusion injury." (*Id.* at ¶ 76, citing CX 2043 (identified above) and EX 1038, Nauck M.A., et al. "Normalization of Fasting Hyperglycemia By Exogenous Glucagon-Like Peptide 1 (7-36 amide) In Type 2 (Non-Insulin Dependent) Diabetic Patients" *Diabetologia*, 1993; 36:741-741-44).

72) Dr. Nyquist testifies that Efendic's specification describes treating a patient in the acute phase of stroke and that one of ordinary skill in the art would have been able to determine whether a patient was in the acute phase of stroke. (*Id.* at ¶¶ 77-79).

73) The term "organ" as used in Coolidge claim 1 includes the heart and brain as those are the organs most notably affected by ischemia and reperfusion. (*Id.* at ¶ 82).

74) A person of ordinary skill in the art would have understood "organ tissue injury caused by reperfusion of blood flow following a period of ischemia" of Coolidge claim 1 to include at least stroke. (*Id.* at ¶ 83).

IV. Opinion

The rules authorize the Board to take up motions for decisions in any order. 37 C.F.R. § 41.125(a). We elect to first consider Coolidge's unpatentability motion regarding Efendic's alleged violation of § 135(b). We then take up Coolidge's motion for no interference-in-fact and then take up Coolidge's remaining unpatentability motions (enablement, written description and indefiniteness). We then turn to Efendic's unpatentability motion based on prior art. In view of our decisions on Coolidge's enablement and written description motions as well as Efendic's prior art motion we do not believe it is necessary to consider the remaining substantive motions. Lastly, we take up Coolidge's miscellaneous motion to exclude evidence.

The interference rules provide:

> To be sufficient, a motion must provide a showing, supported with appropriate evidence, such that, if unrebutted, it would justify the relief sought. The burden of proof is on the movant.

37 C.F.R. § 41.208(b). For the motions before us, the burden of proof is by a preponderance of the evidence. The burden of showing something by a preponderance of the evidence simply requires the trier of fact to believe that the existence of a fact is more probable than its nonexistence before the trier of fact may find in favor of the party who carries the burden. *Concrete Pipe & Products of California, Inc. v. Construction Laborers Pension Trust for Southern California*, 508 U.S. 602, 622, 113 S. Ct. 2264, 2279 (1993). Yet, in rendering factual findings:

> . . . it is impermissible for the Board to base its factual findings on its expertise, rather than on evidence in the record, although the Board's expertise appropriately plays a role in interpreting record evidence.

Brand v. Miller, 487 F.3d 862, 869 (Fed. Cir. 2007).

A. Coolidge Motion 2 for Judgment Based on 35 U.S.C. § 135(b)

Coolidge Motion 2 requests judgment against all of Efendic's involved claims on the grounds that Efendic's claims are barred under § 135(b)(1). (Paper 31, p. 1, ll. 3-14). Efendic opposes. (Paper 48).

1. Legal Principles Regarding 35 U.S.C. § 135(b)(1)

Section 135(b)(1) reads:

> A claim which is the same as, or for the same or substantially the same subject matter as, a claim of an issued patent may not be made in any application unless such a claim is made prior to one year from the date on which the patent was granted.

Section 135(b) codifies a legal principle akin to laches imposing a statute of repose on interferences so that the patentee might be more secure in his patent rights. *Regents of the University of California v. University of Iowa Research Foundation*, 455 F.3d 1371, 1376 (Fed. Cir. 2006). The intent in enacting § 135(b) was to limit the time during which an interference might be provoked. *Berman v. Housey*, 291 F.3d 1345, 1351 (Fed. Cir. 2002).

The Federal Circuit has explained that a claim may comply with Section 135(b)(1) where the claim is entitled to an earlier pre-critical filing date. Specifically, the Federal Circuit has stated that:

> [A] copied claim may be entitled to the earlier effective date of prior claims in an application only if the copied claim does not differ from the prior claims in any material limitation. The analysis focuses on the copied claim to determine whether all

> material limitations of the copied claim necessarily occur in the prior claims. If all material limitations of the copied claim are present in, or necessarily result from, the limitations of the prior claims, then the copied claim is entitled to the earlier effective filing date of those prior claims for purposes of satisfying 35 U.S.C. § 135(b). [citations omitted]

In re Berger, 279 F.3d 975, 982 (Fed. Cir. 2002). Thus, the principle of § 135(b)(1) is that an interference is barred (and the claims are patentable) if the current interfering claim was not made, in substance, before the expiration of the one-year grace period set by § 135(b)(1).

2. Efendic's Post-Critical Date Amendment

On September 22, 1999, Efendic filed the involved '802 application. On June 4, 2003, the Examiner rejected all of the pending claims in Efendic's '802 application. (CX 2003). According to the Examiner, Efendic's pending claims were obvious over the prior art. (*Id.*). On September 8, 2003, Efendic amended its original '802 claim 1 for the first time. (Coolidge Reply 2, ¶¶ 6, 25, admitted and CX 2005). Specifically, Efendic's September 2003 amendment amended independent claims 1 and 12 with the remaining claims, claims 2-11, all dependent from the amended claim 1. (CX 2005, p. 2). Efendic claim 12 was cancelled in a subsequent amendment filed March 3, 2006 leaving the involved claims 1-11.

Coolidge's involved '725 patent issued on September 4, 2001. (Paper 64, ¶ 3, admitted). Hence, Efendic's September 2003 amendment to claim 1 was outside of the one-year grace period identified in § 135(b)(1). Efendic's amended claim 1 is involved in the interference and forms a part of Count 1. (*Id.* at. ¶ 27, admitted).

3. Comparing Scope of Amended and Original Claims

There is a general presumption that claim amendment subsequent to an Examiner's rejection is material to patentability. *Cf.*, *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 734, 122 S. Ct. 1831, 1838 (2002) ("A rejection indicates that the patent examiner does not believe the original claim could be patented. While the patentee has the right to appeal, his decision to forgo an appeal and submit an amended claim is taken as a concession that the invention as patented does not reach as far as the original claim.").

Coolidge contends that all of Efendic's claims, claims 1-11, are barred under 35 U.S.C. § 135(b)(1) due to the post-critical date amendment to Efendic claim 1. Efendic presents specific arguments regarding Efendic claim 1 but does not separately address the patentability of the remaining claims. We treat all of Efendic's involved claims as standing or falling together with Efendic claim 1. *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997) ("However, where the party urging patentability does not separately address the patentability of each claim corresponding to the count, the Board has reason to treat all claims together.")

Provided below is a comparison of Efendic's original claim 1 and amended claim 1:

Efendic Original Claim 1	Efendic Amended Claim 1
A method of reducing mortality and morbidity after stroke, comprising administering to a patient in need thereof, a compound selected from the group consisting of GLP-1, GLP1 analogs, GLP-1 derivatives, and pharmaceutically acceptable salts thereof, at ***a dose effective to normalize blood glucose***.	A method of treating stroke, comprising administering an ***effective amount*** of a compound selected from the group consisting of GLP-1, GLP-1 analogs, GLP-1 derivatives, and pharmaceutically-acceptable salts thereof, to a patient in need thereof.

(Paper 64, ¶ 11, admitted, emphasis added).

Coolidge alleges that there are three material differences between Efendic's original claim 1 and amended claim 1. Specifically Coolidge directs the Boards attention to alleged differences in scope in: 1) the timing of the treatment, 2) the treatment of stroke *per se* as opposed to reduction of mortality and morbidity and, 3) the change in the effective amount. (Paper 31, p. 3, ll. 13-24). Efendic disagrees there the claims are of different scope contending that the evidence of record contradicts the position underlying Coolidge's arguments on alleged differences in scope. (Paper 48, p. 12, ll. 6-8).

Efendic's claims are given their broadest reasonable construction in light of Efendic's specification. 37 CFR § 41.200(b); *cf., In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004). We construe the claims beginning with the plain language of the claims but look to the specification to determine whether the inventor specifically defined the terms in the claims or disavowed certain embodiments. Specifically, as discussed in *Phillips v. AWH Corp*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc):

> Consistent with that general principle, our cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor's lexicography governs. [citation omitted]. In other cases, the specification may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor. In that instance as well, the inventor has dictated the correct claim scope, and the inventor's intention, as expressed in the specification, is regarded as dispositive.

Id. at 1316.

a. No Difference in Timing of Treatment

According to Coolidge, Efendic's amended claim 1 changed the timing of the stroke treatment. Specifically, Coolidge states that original claim 1 was limited to treatment after a stroke had occurred but the amended claim embraces treatment before the stroke occurs. (Paper 31, p. 4, l. 21 to p. 5, l. 9 and Paper 64, p. 5, l. 8 to p. 6, l. 13). Efendic disagrees stating that the specification uses the terms "treating stroke" and "reducing mortality and morbidity after stroke" interchangeably. (Paper 48, p. 6. ll. 19-24).

Efendic's specification repeatedly identifies the invention as relating to a method of treating "after stroke" has occurred. (CX 2001). For example, Efendic's specification makes the following statements (emphasis added):

> This invention relates to methods and compositions for reducing mortality and morbidity ***after stroke*** by controlling hyperglycemia. (*Id.* at p. 1, ll. 6-7).
> The present invention provides methods and compositions for reducing mortality and morbidity ***after stroke***. (*Id.* at p. 3, ll. 29-30).

> The present invention provides the benefits of reduction in mortality and morbidity in diabetics ***after stroke***, for example, by effecting smaller infarct size. (*Id.* at p. 3, line 33 to p. 4, line 1).
>
> Methods and compositions, in particular medicaments (pharmaceutical compositions or formulations) using glucagon-like peptide-1, analogs or derivatives thereof, are effective in reducing mortality and morbidity ***after stroke*** in diabetic patients, in particular, in non-insulin dependent diabetics. (*Id.* at p. 4, ll. 27-30).
>
> Methods for preparing the active compounds used in the present invention, namely GLP-1, an GLP-1 analog, or a GLP-1 derivative, or any related compound including an active fragment effective in reduction of mortality or morbidity ***after stroke*** when administered peripherally, are well-known, and are described in U.S. Patent Nos. 5,118,666; 5,120,712; and 5,523,549. (*Id.* at p. 15, ll. 12-16).
>
> The treatment which is the subject of this invention is generally given to a person ***during the acute phase of stroke***. (*Id.* at p. 23, ll. 29-31).

Efendic's specification clearly and repeatedly informs one of ordinary skill in the art that Efendic's method of treating stroke was directed to providing treatment after a stroke had begun and Coolidge does not direct our attention to a specific statement in the specification that teaches otherwise. While the Board is tasked with construing claims broadly, the construction must be reasonable in light of the specification. Based upon the facts presented, we conclude that Efendic's amended claim 1 is limited to administering treatment after a stroke has begun and did not materially alter the time for administering treatment.

b. Efendic Uses Terms "Treating Stroke" and Reducing Mortality and Morbidity" Interchangeably

Coolidge alleges that there is a material difference in scope between Efendic's pre-critical and post-critical date reduction of morbidity and mortality and the treatment of stroke *per se*. The entirety of Coolidge's argument reads as follows:

> Second, the pre-critical date claims call for reduction of morbidity and mortality, while the post-critical date claims call for treatment of stroke *per se*, which can include e.g., prophylaxis, medical support during stroke, and treatment of related conditions that can be, but are not always, associated with a stroke condition or death *per se*.

(Paper 31, p. 3, ll. 17-20). Coolidge does not direct our attention to specific evidence supporting this particular contention. Indeed, Coolidge admitted that one of ordinary skill in the art would have known that the purpose of treating a stroke would be to reduce mortality and morbidity from stroke. (Paper 64, admitting ¶ 45, which cites Nyquist testimony EX 1031, ¶ 40). Based upon the facts presented we conclude that one of ordinary skill in the art would have understood that the pre-critical ***and*** post-critical claims relate to methods of reducing mortality and morbidity. Accordingly, Coolidge has failed to demonstrate a difference in scope arising from the change in "morbidity and mortality" claim language.

c. Efendic's "Effective Amount" is Broader than "Dose Effective to Normalize Blood Glucose"

Efendic's pre-critical date claims required that the amount of an active agent administered was that which was required to normalize blood glucose

where whereas the post-critical date claims require that an "effective amount" of the agent be administered.

The question before us is whether claim terms "effective amount" and "dose effective to ***normalize*** blood glucose" are of identical scope. Coolidge generally contends that the post-critical date claimed amount is broader than the pre-critical date. (Paper 31, p. 3, ll. 21-24 and Transcript, Paper 90, 16:10-15). Efendic contends that the claims are generally the same scope but "if there's a difference in scope its modest." (Paper 90, p. 24:14-17).

Controlling blood glucose is broader on its face than normalizing blood glucose. Specifically, controlling blood glucose is not limited to normalizing a patient's blood glucose. For example, one could control blood glucose by reducing blood glucose levels to a level above normal. That there is a difference in scope is consistent with Efendic's specification, which provides two different disclosures regarding dosages, with one disclosure directed to "controlling blood glucose" and the other directed to "normalizing blood glucose". (CX 2001, p. 23, ll. 5-18 and p. 24, ll. 6-18).

The effective amount in Efendic's amended claims is broader on its face than the pre-critical date "dose effective to normalize blood glucose" and Efendic's specification does not require otherwise. Giving the claims their broadest reasonable construction in light of the specification, we conclude that Efendic's amended claim is broader in scope than Efendic's original claim as the amended claims allow for dosing to achieve a variety of end points whereas the original claims required dosing to achieve normalization.

4. Differences in Claim Scope Not Proven to Be Material

The parties disagree on what is required to demonstrate a "material" difference. Efendic contends that the inquiry is whether the difference is a limitation that is necessary to patentability. (Paper 48, p. 3, line 1 to p. 4, l. 10). Coolidge disagrees stating that material differences include those that impact the nature of the invention claimed. Coolidge fails to meet its burden of proof under either standard.

a. Efendic's Broader Scope Not Material to Patentability

The Office Action rejecting Efendic's pre-critical date claims contained only prior art rejections. (Paper 64, ¶ 24, admitted). Efendic responded to the Office Action by amending claims 1, 11 and 12 and cancelling claims 13-15 "without prejudice." (CX 2005, p. 4). As acknowledged by Coolidge, Efendic's post-critical date amended claims are broader than the pre-critical date claims. (Paper 90, 16:5-15). Coolidge has not explained to us, given the facts of record in this case, how an amendment that broadens the claims in face of prior art is necessary to patentability.

Coolidge contends that the amendment is material to patentability as Efendic has characterized its amendments as conferring patentability on its claims. In particular, Coolidge cites the following passage from Efendic's September 8, 2003 amendment to support its contention:

> Applicant respectfully requests that the Examiner enter the following amendments that Applicant believes place the application in condition for allowance.

(CX 2005, p. 1). Coolidge however, has failed to account for Efendic's presentation of approximately three pages of argument traversing the prior

art. (*Id.* at pp. 4-7). Specifically, Efendic traversed, contending that particular prior art reference (Dietrich) related to pre-ischemic hyperglycemia whereas Efendic invention treats patients "after they have had a stroke." (*Id.* at p. 4-5, emphasis in original).[5] We conclude that Coolidge has failed to demonstrate that Efendic amended (broadened) its claims to overcome the prior art rejections.

b. Essence of the Claimed Subject Matter Remained the Same

Coolidge contends that, in analyzing materiality, the Board needs to consider the impact an amendment had upon the nature of the invention claimed. (Paper 64, p. 4, ll. 1-5). Coolidge cites a chain of cases to support its contention. Specifically, Coolidge cites *In re Berger*, which cites to *Corbett v. Chisholm*,[6] which cites to *Wetmore v. Miller* [7]which cites to *Stalego v. Heymes*. [8] (*Id.* at p. 3, ll. 5-31).

Corbett, Wetmore and *Stalego* involved questions of compliance with 35 U.S.C. § 135(b). *Corbett* and *Wetmore* indicate that a material limitation is one that is "necessary to patentability."[9] *Stalego* however, discussed materiality in terms of a difference in the essence of the claimed subject matter.[10] *Stalego* states that the specific differences must be evaluated on

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[5] For example, Efendic stated "[t]he Dietrich reference focuses on hyperglycemia prior to an ischemic event." (*Id.* at p. 5).
[6] 568 F.2d 759 (CCPA 1977).
[7] 477 F.2d 960 (CCPA 1973).
[8] 263 F.2d 334 (CCPA 1959).
[9] *Corbett* at 765 ("Corbett does not seriously contend that this is not a material limitation, that is necessary to patentability"), *Wetmore* at 963-64 (limitation not necessary to patentability was not "material.").
[10] *Stalego* at 339 states:

the particular circumstances of the case. *Id.* at 335 ("[T]he ultimate question to be decided in such cases is generally whether specific differences between claims are material; and that is a question which must be decided largely on the basis of the particular circumstances of each case.")

Coolidge has the burden of proving that the essence of the invention differed between the pre- and post-critical date claims. In evaluating Coolidge's arguments and evidence we limit ourselves to the arguments and evidence referred to in Coolidge Motion 2. We do not take into account additional exhibits submitted in connection with Coolidge's other motions but not identified in Coolidge Motion 2. For example, we do not take into account additional exhibits submitted in connection with Coolidge Motions 3-5, which concern Efendic's alleged non-compliance with 35 U.S.C. § 112. See, *e.g.*, Standing Order, Paper 2, ¶ 106.2, incorporation by reference prohibited.

Coolidge states that the change in dosing is material as the pre-critical date claims had applicability not just to diabetics but all those in need of treatment of stroke. As discussed above, Efendic's specification provides a specific definition of the term "patient in need" and Efendic's amendment did not alter this definition. (Paper 31, p. 5, ll. 10-18).

Both Efendic's pre- and post-critical date claims are directed to

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> As was pointed out in the Rieser v. Williams opinion, the rule that every express limitation must be considered material, which is applied in determining the right of a party to make a count of an interference, is not applicable in determining whether claims are directed to substantially the same subject matter within the meaning of 35 U.S.C. § 135. In the latter situation it is necessary to distinguish between those limitations which relate to the essence of the claimed subject matter and those which do not.

methods of treating a patient after a stroke has begun. The pre- and post-critical date claims treat the same patients, patients that are in the acute phase of stroke, and who also are incapable of auto-regulation of blood glucose. The pre- and post-critical date claims administer the same active compounds, GLP-1, GLP-1 analogs or GLP-1 derivatives. Further, the purpose of the treatment is the same for both the pre- and post-critical date claims, reducing mortality and morbidity. It was Coolidge's burden to establish that the difference in claimed dosage amounts altered the essence of Efendic's invention. Coolidge Motion 2 fails to meet that burden.

Coolidge has failed to demonstrate that Efendic's amended terminology added a material difference to the construction of the claims at the time of the amendment. We ***deny*** Coolidge Motion 2.

B. Efendic Responsive Motion 3

Efendic Responsive Motion 3 seeks to redefine the scope of the interference by adding a claim 12 to Efendic's involved '802 application. (Paper 40, p. 1). The motion is responsive to Coolidge Motion 2, which requests judgment against all of Efendic's involved claims based upon 35 U.S.C. § 135(b). We have denied Coolidge Motion 2. Accordingly, we dismiss Efendic Responsive Motion 3 as moot.

C. Coolidge Substantive Motion 1 for No Interference-in-Fact

Coolidge Substantive Motion 1 requests that judgment be entered that there is no interference-in-fact between the parties. (Paper 30, p. 1, ll. 5-7). Coolidge contends that its claims are of different scope than that of Efendic and that Coolidge's claims do not anticipate or render obvious Efendic's and

vice versa. In particular, Coolidge directs the Board's attention to three alleged differences in scope between the parties claims as follows:

> As illustrated in Appendix 3, Coolidge respectfully submits that this [mistaken Declaration of Interference] is most easily discerned by looking at each of these three contrasting requirements: targeted condition or injury; targeted patient; and amount of agent administered.

(*Id.* at p. 2, ll. 18-21). Efendic opposes contending that Coolidge fails to explain how the alleged "contrasting differences" result in a conclusion of non-obviousness. (Efendic Opposition 1, Paper 47, p. 1, ll. 4-9).

1. Legal Principles

An interference in fact exists when an application and a patent or an application and another application each have at least one claim directed to patentably indistinct subject matter. The existence of an interference in fact is initially determined by applying the so called "two-way test" of 37 C.F.R. § 41.203(a)(2004):

> An interference exists if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party and vice versa.

Thus, the subject matter of a claim of one party is assumed to be prior art with respect to the claimed subject matter of the opponent. An evaluation is made to determine if the opponent's subject matter is anticipated by or obvious from the subject matter of the party's claims. The analysis is then repeated with the opponent's claimed subject matter assumed to be prior art. No interference-in-fact is shown if the outcome of

either evaluation is that one party's subject matter is neither anticipated nor obvious from the others. In order to prevail on the motion, Coolidge must demonstrate that none of its claims or none of Efendic's claims are directed to subject matter which anticipates or renders obvious the subject matter of any of the other party's claims. In other words, Coolidge must show that there is no pair of claims which meet the two-way test.

Coolidge generally acknowledges that the parties' claims overlap but contends that the differences in scope between the parties' claims are unobvious differences. Obviousness is a question of law, determined on several factual inquiries, including:

> the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. . . . Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966). Thus, even if Coolidge and Efendic claim different methods of treating a patient with an effective amount of GLP-1, Coolidge must provide factual evidence that its method does not render Efendic's method obvious, or vice versa, to prevail on its motion for no interference-in-fact. *Medichem, S.A. v. Rolabo, S.L.*, 353 F.3d 928, 935 (Fed. Cir. 2003) ("Although obviousness is a question of law, it is based on underlying factual determinations. [citation omitted] ").

We recognize that Coolidge's burden is to prove a negative. Coolidge must show that those in the art would not have been led to a GLP-1 method of ameliorating organ tissue injury due to reperfusion after learning of a

GLP-1 method of treatment for stroke or vice versa. Coolidge must also allege that it is not aware of any prior art that when combined with the other's claims would have rendered Coolidge's claimed subject matter obvious. A party might overcome its burden by showing, in light of the *Graham* factors, those in the art would not have developed the subject matter claimed using common sense and the knowledge available and motivated by needs and problems faced at the time. *See KSR Int'l v. Teleflex, Inc.*, 127 S.Ct. 1727, 1741-42 (2007). Such a showing often comes in the form of witness testimony about what those in the art did or did not know. Alternatively, a party might show that there was prior art that taught away from any modifications of the subject matter. *See In re Gurley*, 27 F.3d 551 (Fed. Cir. 1994). In any case, if a party presents opinion testimony from a witness, the testimony must be supported with factual evidence. *Cf. Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) ("At this critical point in the determination of obviousness, there must be factual support for an expert's conclusory opinion."). Thus, Coolidge's burden can only be met by presenting factual evidence of what those in the art would or would not have done given the knowledge of Efendic's claimed subject matter and any other relevant prior art.

An appropriate and logical place to analyze the question of no interference-in-fact is a pair of Efendic and Coolidge claims. Coolidge claim 2 is closest to Efendic claim 1. Coolidge claim 2 depends from Coolidge claim 1 and requires that Coolidge's glucagon-like-peptide 1 is GLP-1 or a biologically active analogue. Yet, as Coolidge's GLP-1 limitation is not in dispute, we have followed the parties' lead and generally focused on Efendic claim 1 and Coolidge claim 1.

Coolidge contends that there are three different aspects of Efendic and Coolidge's claims that give rise to no interference-in-fact. (Coolidge Substantive Motion 1, Paper 30, p. 2, ll. 10-11).[11] Coolidge highlights the alleged three "contrasting requirements" of Efendic and Coolidge's claims in Coolidge Appendix 3, which is reproduced below:

EFFENDIC Claim 1	COOLIDGE Claim 1
A method of treating *stroke*,	1. A method for *amelioration of organ tissue injury caused by reperfusion of blood flow following a period of ischemia*,
comprising administering **an effective amount** of a compound selected from the group consisting of GLP-1, GLP-1analogs, GLP-1 derivatives, and pharmaceutically-acceptable salts thereof,	which comprises: administering to ***an individual in need of such*** treatment **an effective amount** of a composition which includes a compound which binds to a receptor for glucogon-like-peptide-1,
to ***a patient in need thereof.***	in a pharmaceutical carrier.

(*Id.* at Appendix 3, emphasis in original).

[11] Coolidge argues that Coolidge's claims are unobvious over Efendic's claims and vice versa. In arguing nonobviousness in both directions however, Coolidge is presenting arguments that we should not decide priority of invention if Efendic's claims are unobvious over Coolidge's. While we have analyzed all of Coolidge's arguments, Efendic has admitted that Efendic's claims would be unpatentable to Efendic if Coolidge's claims represent §102(g) prior art to Efendic and we accept Efendic's admission as an admission against interest. (See, e.g., Efendic Opposition 1, Paper 47).

The difference in claim scope between the parties' claims is analyzed below. Generally, as will be apparent from the analysis, Coolidge has failed to meet its burden and demonstrate that the differences in scope are non-obvious such that Coolidge's claims, taken in light of the prior art, fails to render obvious Efendic's claims or vice versa. *Cf., Dann v. Johnston*, 425 U.S. 219, 230 (1976) (the mere existence of differences between the prior art and an invention does not establish the inventor's non-obviousness).

2. Difference in Targeted Condition or Injury

Coolidge contends that Efendic's claims are directed to a method of treating stroke whereas Coolidge's claims are directed to a method for ameliorating tissue injury caused by blood flow reperfusion. (Paper 30, p. 3, ll. 1-10). Coolidge states that blood flow reperfusion follows a period of ischemia while stroke includes both ischemic and non-ischemic events. (*Id.*). Coolidge concludes that:

> As the nature of the condition addressed by the Coolidge claims is in no way specific to stroke, but rather, focuses on an event, reperfusion injury, which may or may not occur in stroke, nothing in the Coolidge method of treatment claim language suggests a method of treating stroke.

(*Id.* at p. 4, ll. 5-9).

Coolidge's contention, even if correct, fails to establish that there is no interference-in-fact between the parties' claims. Specifically, an obviousness determination is made from the perspective of a person of ordinary skill in the art presumed to have knowledge of all the pertinent prior art. As discussed below, Coolidge's contention is limited to comparing

the claims and does not establish with credible evidence that Coolidge has considered the scope and content of the prior art. [12]

a. Overlap Between Stroke and Reperfusion Injury

Coolidge admits that ischemic strokes account for about 85% of all strokes and that hemorrhagic strokes account for the remaining 15%. (Coolidge Reply 1, Paper 63, ¶ 42). Coolidge also admits that a mechanism of injury to the brain as a result of ischemic insult involved in stroke is reperfusion injury. (*Id.* at ¶ 12, admitted). Accordingly, we find that there is an overlap between the parties claimed injuries, stroke and reperfusion, *i.e.*, a person suffering a stroke may also have reperfusion injuries and vice versa.

b. Relationship between Hyperglycemia and Stroke and Reperfusion

Dr. Nyquist, testifying for Efendic, states that hyperglycemia is a metabolic change that was understood by one of ordinary skill in the art to play a role in injury caused by reperfusion. (EX 1031, ¶ 67). Dr. Nyquist's testimony is consistent with the prior art. Specifically, the prior art de Courten-Myers article[13] describes hyperglycemia as associated with larger

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[12] Coolidge does not provide a clear direction to the portions of the record that support its contentions, e.g., identify which material facts are relied upon for a specific contention. It is Coolidge's burden to clearly identify the facts supporting a particular contention as opposed to asking the Board to play archeologist with the record. *DeSilva v. DiLeonardi*, 181 F.3d 865, 867 (7th Cir. 1999) (a brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.).

[13] De Courten-Myers GM, *et al.* "Fatal Strokes in Hyperglycemic Cats." *Stroke*, 1989 Dec. 20 (12): 1707-15.

infarcts than normoglycemia following a cerebral artery occlusion in cats. (de Courten-Myers Article, CX 2043, abstract). De Courten-Myers states that rendering cats hyperglycemic substantially worsened their outcome after reperfusion by increasing their death rate and that the results of their study demonstrate that serum glucose concentrations should be taken into account for human treatments. (*Id.*). The article states that their cat study is consistent with prior clinical findings that hyperglycemic patients who suffer strokes experience worse prognosis than do normoglycemic contemporaries. (*Id.* at p. 1707). We credit Dr. Nyquist's testimony that hyperglycemia was associated with injuries caused by reperfusion as Dr. Nyquist's testimony is consistent with the teachings of the prior art.

Dr. Nyquist also testifies that hyperglycemia can cause injury during a stroke. (EX 1031, ¶ 66, Nyquist Cross Examination, CX 2062, 20:10 to 21:2, discussing de Courten-Myers, CX 2043). Coolidge denies the relationship between stroke and hyperglycemia citing Efendic's prosecution history for the proposition that the relationship between hyperglycemia and stroke was controversial at best. (Paper 63, ¶ 59). For example, Coolidge directs the Board attention to Efendic's September 8, 2003 Amendment (CX 2005) and November 30, 2006 Amendment[14] (CX 2061) where Efendic sought to distinguish prior art by arguing that:

> Further, there are additional reports in the literature that either suggest no correlation between hyperglycemia and poor prognosis after suffering a stroke or suggest glucose may actually protect the brain from ischemic neuronal damage. (CX 2005, pages 5-6).

[14] The November 30, 2006 Amendment was filed in an Efendic continuation application, 11/369,346, filed March 7, 2006 that claims 35 U.S.C. ¶ 120 benefit of the involved '802 application. (CX 2061, p. 8).

> Thus, not only was there no suggestion to treat stroke by normalizing or controlling blood glucose levels at the time of filing, the relationship between hyperglycemia and stroke outcome was controversial at best. Further, there were studies indicating that normalizing or controlling blood glucose might even be harmful in non-diabetic patients. (CX 2061, p. 12, ll. 26-30).

The September 2003 Amendment and the November 2006 Amendment relied upon three journal articles as support for its contention, articles by Tracey, Woo and Zasslow. (*Id.*).

Coolidge Motion 1 Exhibit List does not cite the Tracey, Woo or Zasslow journal articles identified by Efendic. (Paper 63, Appendix 1, Exhibit List).[15] In contrast, the Exhibit List does cite the de Courten-Meyers article "Fatal Strokes in Hyperglycemic Cats" as evidence relied upon. (*Id.*). The de Courten-Meyers' article states that:

> Our earlier animal studies demonstrated that hyperglycemia extends infarct size resulting from permanent middle cerebral artery (MCA) occlusion. These findings parallel those of the clinic, which indicate that hyperglycemic patients who suffer stroke experience worse prognoses than do their normoglycemic contemporaries. (Footnotes omitted)

(CX 2043, p. 1707). Based upon the evidence cited and relied upon by the parties, we find that hyperglycemia can worsen stroke prognoses as compared to normoglycemic contemporaries. Moreover, whatever the ultimate effect of Efendic's statements might be on Efendic, they are not

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[15] The Exhibit List in Coolidge Reply 1 does not even cite the September 2003 or November 2006 Amendment relied upon in Coolidge's denial of material fact ¶ 59. Again, we remind Coolidge that it is not the Board's job to play archeologist with the record.

admissions by the Director and do not prevent the Director from being of the opinion that an interference exists between the parties. See 35 U.S.C. § 135(a) (making the "opinion of the Director" the test for the existence of an interference).

c. GLP-1 Has a Unique Therapeutic Potential for Treating HyperGlycemia in a Patient

Both parties agree that the ability of GLP-1 to lower blood glucose levels in people with elevated blood glucose levels was known at the time of filing their respective applications. (Coolidge Reply 1, Paper 63, ¶ 62). This agreement as to the known properties of GLP-1 is consistent with the descriptions provided by the parties' specifications and the prior art. For example, Coolidge describes GLP-1 as a unique molecule having a unique therapeutic potential in its capacity to simultaneously stimulate insulin secretion and inhibit glucagon release. (EX 1001, col. 6, ll. 8-19). Further, the prior art establishes that hyperglycemic patients given GLP-1 were able to maintain stable plasma glucose concentrations. (Nauck,[16] EX 1038, abstract). Based upon the evidence of the record we find that GLP-1 was known in the art to be useful in treating elevated blood glucose levels (hyperglycemia) in a patient.

d. Coolidge Fails to Demonstrate Nonobviousness over Prior Art

Coolidge states that Efendic's claimed treatment of stroke fails to

[16] Nauck M.A., et al. "Normalization of Fasting Hyperglycemia By Exogenous Glucagon-Like Peptide 1 (7-36 amide) In Type 2 (Non-Insulin Dependent) Diabetic Patients" *Diabetologia*, 1993; 36:741-741-44).

render obvious Coolidge's claimed treatment of reperfusion injury. Coolidge contends that there is "no contradictory art available" to be considered. (Coolidge Reply 1, Paper 63, p. 3, l. 6). We hold otherwise.

Dr. Nyquist testifies that he found the de Courten-Myers article through a PubMed search prior to drafting his declaration. (*Id.* at p. 3, ll. 7-8). Coolidge takes the position that the article indicates that reperfusion is not an obvious consequence of stroke and that reperfusion would not have been a therapy given to stroke patients. (*Id.* at p. 3, ll. 8-11). Coolidge's attorney argument contradicts the plain language of the de Courten-Meyers article. For example, the de Courten-Myers article is entitled "Fatal Strokes in Hyperglycemic Cats." The article states that reperfusion caused a much higher proportion (54% vs. 17%) of hyperglycemic cats to die of infarct extension, hemorrhagic infarct conversion and total territory edema as opposed to normoglycemic cats. (CX 2042, abstract).

e. Coolidge Fails to Meet its Burden of Proof

Coolidge contends that stroke and reperfusion are patentably distinct types of injuries. Coolidge however fails to properly account for the prior art. As discussed above, there is overlap between the two injuries and hyperglycemia can play a role in both injuries. Further, GLP-1 was a known molecule that had unique properties in its ability to treat patients having hyperglycemia. We conclude that Coolidge has failed to meet its burden of proof and establish that Efendic's method of treating stroke by administering GLP-1 fails to render obvious a method of treating reperfusion injury by administering GLP-1 or that Coolidge's method fails to render obvious Efendic's.

3. Targeted Patient

Coolidge contends that the targeted individuals are different. (Coolidge Motion 1, Paper 30, pages 4-5). In particular Coolidge argues that:

> What, in Efendic claim 1, suggests treatment of injury due to reperfusion, rather than the some other aspect of stroke? What in Coolidge claim 2, specifically teaches treating someone suffering an injury to brain tissue caused by reperfusion, as opposed to heart, liver, kidney or some other organ tissue injured by reperfusion? Unless and until these questions can be answered by reliance on the claims themselves, and Coolidge submits that they cannot be so answered, there is no interference in fact and so no basis for continuing.

(*Id.* at p. 5, ll. 9-15). Coolidge also contends that a stroke patient is not an obvious candidate for amelioration of reperfusion injury. (Paper 63, p. 4, ll. 13-16).

Coolidge's arguments regarding targeted patient fail to take into account the teachings of the prior art and Efendic's definition of a patient in need of treatment. Again, both parties agree that there is overlap between patients having stroke and patients suffering reperfusion injuries. Further, Efendic defines its patient as one who is incapable of auto-regulation of blood glucose and the prior art demonstrates that hyperglycemia can play a role in both strokes and reperfusion injury. The prior art also teaches that GLP-1 was known in the art to be useful in treating elevated blood glucose levels (hyperglycemia) in a patient. We conclude that Coolidge has failed to meet its burden of proof and provide credible evidence to demonstrate that Efendic's patients and Coolidge's individuals in need of treatment represent patentably distinct groups for GLP-1 treatments.

4. Effective Amount

Coolidge argues that the effective amount recited in Efendic claim 1 is not obvious over the effective amount recited in Coolidge claim 1. Coolidge admits however that Efendic's claimed amounts anticipate Coolidge's claimed amounts.[17]

According to Coolidge, there can be no interference-in-fact without some teaching that the GLP-1 amounts administered by Coolidge should be narrowed. (Paper 30, p. 6, ll. 13-16). We remind Coolidge that:

> Selecting a narrow range from within a somewhat broader range disclosed in a prior art reference is no less obvious than identifying a range that simply overlaps a disclosed range. In fact, when, as here, the claimed ranges are completely encompassed by the prior art, the conclusion is even more compelling than in cases of mere overlap. The normal desire of

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[17] Coolidge states:

> Both Efendic claim 1 and Coolidge claim 1 recite the administration of "an effective amount." Notwithstanding the identical nature of the language, the amounts actually administered, and the teaching of the amount to be administered, are different. The amount defined in the Coolidge patent as "an effective amount" is, not surprisingly, different from the amount recited in the Efendic application. The range recited in Coolidge is broader, in all respects, than the range recited in Efendic. That is, there is no overlap in terms of end points, or specific ranges. While it is true that the term "an effective amount" as recited in Efendic, if read in light of the '802 application specification, anticipates the "an effective amount" of Coolidge claim 1, the reverse is not true. Coolidge claim 1 neither anticipates, nor renders obvious the effective amount required by Efendic claim 1.

(Paper 30, p. 5, l. 17 to p. 6, l. 4).

> scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.
>
> . . .
> We therefore conclude that a prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a prima facie case of obviousness. That is not to say that the claimed composition having a narrower range is unpatentable. Rather, the existence of overlapping or encompassing ranges shifts the burden to the applicant to show that his invention would not have been obvious, as we discuss below.

In re Peterson, 315 F.3d 1325, 1329-30 (Fed. Cir. 2003). Coolidge does not present credible evidence that Efendic's narrower range provides unexpected results.

As discussed above, Dr. Nyquist and the prior art relied upon establish that hyperglycemia can play a role in strokes and reperfusion injury. We conclude that Coolidge's known reperfusion treatment using broader ranges of GLP-1 taken in light of the prior art provided one of ordinary skill in the art a reason to optimize and arrive at Efendic's claimed amounts of GLP-1 for treating a patient in the acute phase of stroke who is incapable of auto-regulation of blood glucose.

Coolidge Reply 1 (Paper 63) contains new arguments concerning the alleged differences in Coolidge and Efendic's effective amounts. In particular, Coolidge Reply 1 contends that no matter what amount of GLP-1 is given to a patient in Efendic's claims, it does not render obvious the amount to be given in Coolidge's claims. (*Id.* at p. 4, l. 19 to p. 6, l. 3). Coolidge's arguments that its claimed amounts are unobvious over Efendic's contradicts the Coolidge argument that Efendic's amount anticipates

Coolidge's, anticipation being the epitome of obviousness.

The Standing Order (Paper 2) clearly notifies a moving party that it is impermissible to present new evidence and issues in a reply that were necessary to make out a prima facie case. Specifically, the Standing Order states that:

> A reply that raises a new issue or belatedly presents evidence will not be considered and may be returned. The Board will not attempt to sort proper from improper portions of the reply.

(SO at ¶ 122.5). *Cf., Kaufman Company, Inc. v. Lantech, Inc.*, 807 F.2d 970, 973 n. * (Fed. Cir. 1986); *McBride v. Merrell Dow and Pharmaceuticals, Inc.*, 800 F.2d 1208, 1210-11 (D.C. Cir. 1986)("We generally will not entertain arguments omitted from an appellant's opening brief and raised initially in his reply brief . . . . Considering an argument advanced for the first time in a reply brief, then, is not only unfair to an appellee, . . . but also entails the risk of an improvident or ill-advised opinion on the legal issues tendered.")(citations omitted).

Consistent with the Standing Order's prohibition on belatedly raised issues, we will not consider Coolidge Reply 1's arguments on the unobviousness of Coolidge's claimed effective amounts.

Coolidge has not carried its burden of showing that there is no interference-in-fact between the claims of its patent and Efendic's application. Coolidge Motion 1 is ***denied***.

C. Coolidge Substantive Motion 3 for Judgment Based on Lack of Enablement

Coolidge Substantive Motion 3 requests that the Board enter judgment that all of Efendic's involved claims, claims 1-11, are unpatentable to

Efendic for lack of enablement under 35 U.S.C. § 112, 1st paragraph. (Paper 32). Efendic opposes. (Paper 49).

Generally, Coolidge contends that Efendic has tossed out the mere germ of an idea with respect to treating stroke by administering GLP-1, GLP-1 analogs, or GLP-1 derivatives. (Paper 32, p. 1, ll. 12-17). Coolidge summarized its arguments against Efendic's involved claims, claims 1-11, as follows:

> Coolidge offered argument and evidence that the Efendic designated claims are extraordinarily broad, being directed to treating an unlimited patient population with a wide dosage range of any of an unlimited number of compounds at any time (Motion at 2-3), but the disclosure is far more limited with no working examples directed to the treatment of stroke. Motion at 4-6.

(Coolidge Reply 3, Paper 65, p. 1, ll. 4-8). Efendic opposes Coolidge's motion and focuses on three claim terms: 1) "method of treating stroke," 2) administering an effective amount," and 3) "GLP-1 analogs and GLP-1 derivatives." (Paper 49, Table of Contents).

In opposing Coolidge Motion 3, Efendic did not separately address the patentability of each claim corresponding to the count.[18] We treat

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[18] Efendic Opposition 3 states:

> Absent from Coolidge Motion 3 is an identification of the Efendic claim terms Coolidge challenges as allegedly not enabled. Needing to respond without the benefit of that notice, Efendic below addresses the claim terms at which Efendic believes the Coolidge arguments are meant to be directed. It is clear, however, that none of the arguments raised by Coolidge relate exclusively to any individual Efendic dependent claims; instead, they relate only to Efendic independent claim 1. Therefore, only Efendic claim 1 is addressed in this Opposition.

Efendic claims 1-11 as standing or falling with Efendic claim 1.

1. Legal Principles on Enablement

To comply with the enablement requirements of 35 U.S.C. §112, first paragraph, a specification must adequately teach how to make and how to use a claimed invention throughout its scope, without undue experimentation. *Plant Genetic Systems N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1339 (Fed. Cir. 2003). Naturally, the specification must teach those of skill in the art "how to make and how to use the invention as broadly as it is claimed." *In re Vaeck*, 947 F.2d 488, 496 (Fed. Cir. 1991).

There are a variety of factors which may be considered in determining whether a disclosure would require undue experimentation. These factors include: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Not all of these factors need be reviewed to determine enablement. *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200, 1213 (Fed. Cir. 1991) (noting that the Wands factors "are illustrative, not mandatory. What is relevant depends on the facts.").

Additionally, in analyzing the *Wands* factors, we are mindful that a patent specification need not teach, and preferably omits, what is well

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(Paper 49, p. 6, ll. 3-9).

known in the art. *Spectra Physics Inc. v. Coherent Inc.*, 827 F.2d 1524, 1534 (Fed. Cir. 1987).

2. Expert Testimony on Enablement

The parties have relied upon the testimony of Dr. Ghosh (Coolidge) and Dr. Beal (Efendic) in addition to the testimony of Drs. Elkind and Nyquist, which were discussed above. The following findings present relevant highlights from Dr. Ghosh and Beal's testimony.

a. Testimony of Dr. Soumitra Ghosh (Coolidge)

75) Dr. Ghosh received an M.S. in chemistry from the Indian Institute of Technology in Kanpur, India and a Ph.D. from the University of Chicago in Chicago, Illinois. (CX 2007, ¶ 2).[19]

76) Dr. Ghosh was a staff research scientist at the Salk Institute Biotechnology/Industrial Associates from 1984 to 1991, a senior scientist at Baxter Diagnostics, Inc. from 1991 to 1994 and a director at MitoKor from 1994 to 2003. (*Id.*).

77) In 1998, the year Efendic's '498 provisional application was filed, Dr. Ghosh led a team of scientists in new drug target identification using proteomics technologies. (*Id.* at ¶ 6).

78) Dr. Ghosh has been an Executive Director of Research at Amylin

[19] Dr. Ghosh does not state the date he received his Ph.D. but his curriculum vitae identifies a post doctoral fellowship at Rockefeller University between the years of 1982-1984.

Pharmaceuticals, Coolidge's real party in interest, since 2004. (*Id.* at ¶ 3).

79) We find that Dr. Ghosh is qualified to testify as to the particular facts and understanding possessed by the average person working in the field of peptide chemistry.

80) Dr. Ghosh testifies that Efendic fails to provide sufficient guidance to make and use Efendic's claimed GLP-1 analogs. (*Id.* at ¶¶ 11-29).

81) Dr. Ghosh testifies that Efendic fails to provide sufficient guidance to determine the "effective amount" of a GLP-1, GLP-1 analog or GLP-1 derivative. (*Id.* at ¶¶ 30-32).

82) One of ordinary skill in the medicinal compound art would understand that Efendic's specification fails to define the upper limit on the number of amino acid substitutions, deletions, inversions or additions when compared to GLP-1. (*Id.* at ¶ 11).

83) Efendic's '802 application fails to provide guidance for "the design of a functional GLP-1 analog or GLP-1 derivative based on criteria derived from structural information or peptide modeling." (Ghosh Second Declaration, CX 2029, ¶ 11).

84) At least millions of compounds would fall within Efendic's definition of GLP-1 analog and at least millions of compounds would fall within Efendic's definition of GLP-1 derivative. (CX 2007, ¶¶ 14-15).

85) Dr. Ghosh calculates that there are at least 2×10^{40} (20,000,000,000,000,000,000,000,000,000,000,000,000,000) different peptides that could potentially be considered a GLP-1 analog and even more peptides could be considered a GLP-1 derivative. (CX 2029, ¶¶ 5-7).

86) Dr. Ghosh concludes that:

> Efendic's definition of GLP-1 analog and GLP-1 derivative does not provide a person of ordinary skill any guidance on whether a molecule would fall within or outside such a definition.

(*Id.* at ¶ 29).

87) Dr. Ghosh also testifies that Efendic fails to provide sufficient guidance to one of ordinary skill in the art to determine the effective amount of GLP-1, GLP-1 analog or GLP-1 derivative is to be administered. (*Id.* at ¶ 30).

88) On cross examination, Dr. Ghosh disagreed that Efendic's GLP-1 analogs and GLP-1 derivatives required an active fragment as the term "active fragment" was not adequately defined in Efendic's specification. (EX 1033, 28:1-17).

89) On cross examination, Dr. Ghosh testified that Efendic's specification was:

> [Q]uite unclear about how that [active fragment] would be used to treat mortality or morbidity after stroke is included. It doesn't teach that.

(*Id.* at 28:19-22).

90) Dr. Ghosh testified on cross examination that Efendic's specification did not teach the level of biological activity required for Efendic's claimed GLP-1 analogs and GLP-1 derivatives. (*Id.* at 34:3 – 36:22).

b. Testimony of Dr. John Beal (Efendic)

91) Dr. Beal received a B.S. in Biology and Chemistry from Loras College in 1981 and a Ph.D. in Chemistry from Notre Dame in 1987. (EX 1032, ¶¶ 3-4).

92) Dr. Beal was an NIH Postdoctoral Fellow at Cornell University, Chemistry Department from 1987 to 1990. (*Id.* at ¶ 5).

93) Since 1990, Dr. Beal has been employed by Eli Lilly, the real party in interest for Efendic. (*Id.* at ¶ 6).

94) Dr. Beal's work for Lilly has focused on protein chemistry, e.g., pharmaceutical properties of biotherapeutics through protein engineering. (*Id.* at ¶¶ 7-12).

95) Dr. Beal is qualified to provide testimony regarding the particular facts and understanding by the average person working in the field of peptide chemistry.

96) A person of ordinary skill in the art would have understood Efendic's specification as defining GLP-1 analogs and derivatives as having an active

fragment. (*Id.* at ¶¶ 28-32 and '802 specification, EX 1022, p. 5, ll. 25-27).

97) One of ordinary skill in the art would have understood that Efendic used the term "active fragment" to refer to "the ability to control glucose levels through insulinotropic activity." (EX 1032, at ¶ 29, and '802 specification, EX 1022, p. 3, ll. 11-12 and p. 23, ll. 15-17).

98) Dr. Beal testifies that:

> When the complete definitions of GLP-1 analogs and derivatives (*i.e.*, definitions including the "active fragment" functional limitation) are considered, at least the following paragraphs 13, 17, 19, 22, 24, 28, and 29 of the first Ghosh declaration and paragraphs 4, 5, 8, 9, 12, 14, and 15 of the second Ghosh declaration are incorrect.

(EX 1032, ¶ 32).

99) Dr. Beal does not appear to dispute Dr. Ghosh's first declaration paragraphs 14 and 15, which state that at least millions of compounds would fall within the Efendic's definition of GLP-1 analog and also that at least millions of compounds would fall within Efendic's definition of GLP-1 derivatives. (CX 2007, ¶¶ 14-15).

100) Similarly, Dr. Beal does not appear to dispute Dr. Ghosh's second declaration paragraph 11 which states that Efendic's '802 application lacks a teaching of a design for a functional GLP-1 analog or derivative based on criteria derived from structural information or peptide modeling. (CX 2029, ¶ 11).

101) On cross examination, Dr. Beal testified that he was a specialist in determining the active fragment of GLP-1. (CX 2063, 13:20-22).

102) Dr. Beal testified on cross examination that there may be more than one active fragment sequence. (*Id.* at 25:3-13).

103) On cross examination, Dr. Beal was unable to identify the "active fragment" of GLP-1. For example, Dr. Beal testified as follows:

Q. But if that is the document you're referring to [Efendic '802], please identify for me the active fragment or active fragments.
A. A fragment would be listed on page 5, and it extends across to page 6; bottom of page 5, lines 32, 33, 34, 35.
Q. That's the sequence for GLP-1, is it not?
A. That is correct.
Q. What's the active fragment of that sequence?
A. I would not know.
Q. I'm sorry, sir?
A. I would not know.

(*Id.* at 8:17 to 9:4).

104) Dr. Beal testified on cross examination that "I'm not certain that research has distilled down exactly what the active fragment of the GLP-1 peptide is." (*Id.* at 9:23-25).

105) Dr. Beal testified that armed with the accumulated knowledge up to the date of the cross examination he would first test GLP-1 to see if GLP-1 was the active fragment of GLP-1. Specifically, Dr. Beal testified as follows:

Q. Okay. We've been talking a little bit about the level of skill in the art as of 1998. Let me ask you now to add whatever knowledge has been accumulated up to today at the end of 2006. Armed with that knowledge, can you pick the active fragment that you would first test according to the assay you referred to?

MR. HART: Objection. Scope.

A. I would start with the GLP-1 molecule.

Q. But what's the active fragment that you think you should test, sir? You've got a choice --

A. I would start with 7 to 37.

Q. That's GLP-1, right?

A. Yes.

Q. Okay. That's not going to tell us what the active fragment is, is it?

MR. HART: Same objection.

A. It's the active peptide.

Q. The fragment -- the active fragment is GLP-1?

A. Yes.

(CX 2063, 29:12 – 30:6).

106) Dr. Beal testifies that a person of ordinary skill in the art employing routine experimentation and known assays would have been able to determine whether a potential GLP-1 analog or derivative would function in vivo to lower blood glucose. (EX 1032, at ¶ 34).

107) On cross examination, Dr. Beal testified that the correlation between lowering blood glucose and reducing mortality and morbidity after stroke had not yet been established and would need to be determined in a clinical setting. (CX 2063, 15:1 – 16:9).

108) On cross examination, Dr. Beal testified that it would not be practical to subject all of the possible peptides described in Efendic's '802 specification to clinical testing. (*Id.* at 66:15 – 67:3).

109) Dr. Beal acknowledged on cross examination that Efendic's examples represented a preliminary trial and that additional work would need to be done to determine a reduction in mortality and morbidity after stroke for a GLP-1 treatment. (*Id.* at 16:6 – 19:6).

110) Dr. Beal admitted on cross examination that he did not "know of an assay, clinical or otherwise that actually shows a reduction in morbidity and mortality following stroke." (*Id.* at 67:18-21).

We follow Efendic's lead and begin our enablement analysis by reviewing the claim terms in dispute, starting with GLP-1 analogs and GLP-1 derivatives.

3. Efendic GLP-1 Analogs and GLP-1 Derivatives Require Undue Experimentation to Practice Invention as Broadly as Claimed

Efendic claim 1 requires administering an effective amount of a compound selected from the group consisting of GLP-1, GLP-1 analog and GLP-1 derivatives. The parties dispute the number of compounds falling within the scope of Efendic's claimed analogs and derivatives and whether it would require undue experimentation to practice the breadth of the claim.

a. GLP-1 Analogs and Derivatives Contain a GLP-1 Active Fragment, But Efendic Does Not Structurally Define the Active Fragment

Efendic's specification generally defines GLP-1 analogs as a molecule having one or more amino acid substitutions, deletions, inversions or additions when compared to GLP-1. (CX 2001, p. 6, ll. 3-5). Efendic's specification generally defines GLP-1 derivatives as a molecule having the amino acid sequence of GLP-1 or of a GLP-1 analog, but additionally having at least one chemical modification of its amino acid side groups, α-carbon atoms, terminal amino group, or terminal carboxylic acid group. (*Id.* at p. 6, ll. 12-15).

Using the above definition, Dr. Ghosh calculated that there are at least 2×10^{40} different peptides that could potentially be considered a GLP-1 analog and even more peptides could be considered a GLP-1 derivative. Efendic, and its expert, Dr. Beal, contend that Dr. Ghosh is incorrect as Dr. Ghosh allegedly disregarded a key definition in Efendic's specification.

Efendic directs the Board's attention to the following passage in Efendic's specification:

> GLP-1 analogs, derivatives, variants, precursors and homologues are all suitable for the practice of the invention as long as the active fragment that effects reduced mortality or morbidity after stroke is included.

(Paper 49, ¶ 93, citing CX 2001, p. 5, ll. 25-27). Efendic states that one of ordinary skill in the art would have understood that the term "active fragment" refers to the ability of GLP-1 to control blood glucose through insulinotropic activity. According to Efendic, Dr. Ghosh did not take into account the proper "active fragment" definition when formulating his testimony. (Paper 49, p. 15, l. 17 to p. 17, l. 6).

Efendic is correct that the active fragment must be included in the GLP-1 analogs and derivatives. Specifically, we construe the claims as broadly as the specification reasonably allows. Here, the specification informs one of ordinary skill that the active fragment that effects reduced mortality or morbidity after stroke must be included in order for the GLP-1 analogs and derivatives to be considered suitable for the invention. Accordingly, we hold that Efendic's GLP-1 analogs and GLP-1 derivatives include the active fragment of GLP-1, where the active fragment effects reduced mortality or morbidity after stroke.

Efendic fails to define the structure of the active fragment. Efendic's expert, Dr. Beal, works for Lilly, the real party in interest for Efendic. Dr. Beal testified that he was a specialist in determining the active fragment of GLP-1. Yet, even though he is a specialist, Dr. Beal was unable to identify the structure of the active fragment (s) of GLP-1. (CX 2063, 8:17 to 9:4, 9:23-25, and 25:3-13).

Additionally, Efendic Opposition 3 cites Dr. Ghosh's cross examination testimony for various "admissions" it considers illuminating. The cited admissions are quotations from Dr. Ghosh's cross examination testimony where he identifies certain statements mentioned in Efendic's specification. Dr. Ghosh did not admit that the specification's statements were true but rather admitted that the statements were made. *Cf.*, Standing Order, Paper 2, ¶ 152.2.1, discussing hearsay, ("A specification of an involved application or patent is admissible as evidence only to prove what the specification describes.").

b. Undue Experimentation Required to Practice the Full Scope of the Claimed GLP-1 Analogs and

GLP-1 Derivatives

We analyze Efendic's '802 specification to determine whether it teaches one of ordinary skill in the art how to make and how to use the claimed method of administering GLP-1 analogs and GLP-1 derivatives throughout its scope, without undue experimentation. In particular, we analyze Efendic's GLP-1 analogs and GLP-1 derivatives in light of the *Wands* factors.

We find that the art of treating stroke after stroke had begun was unpredictable, the state of the art was low and the nature of the invention was complex. (Wands Factors 4, 5 and 7). Stroke is a complicated disease having many different causes, subtypes and presentations. Methods of treating this complicated disease suffered from uncertainty. (CX 2043 at 1707, treatment uncertainty, and Elkind Dec., CX 2006). Further, our finding is consistent with the 1999 Stroke Therapy Academic Industry (STAIR) Report, which states:

> Despite much animal research concerning the pathophysiology of focal ischemic brain injury, little of this work has translated into effective treatment modalities for stroke in humans.

(CX 2023 at 2752).[20] Additionally, we also rely upon Efendic's statements made in support of patentability that there was no teaching in the art that lowering blood glucose levels in a patient immediately following stroke would actually treat stroke.[21]

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[20] Stroke Therapy Academic Industry Roundtable. Recommendations for standards regarding preclinical neuroprotective and restorative drugs. Stroke. 1999; 30:2752-2758.

[21] Efendic filed U.S. Application 11/369,346 on March 7, 2006. (CX 2061,

The skill level in the art was high. (Wands Factor 6). The person of ordinary skill in the art would generally be a vascular neurologist in a specialized stroke center. (CX 2006, ¶ 12).

Efendic's claims encompass a very broad range of GLP-1 analogs and GLP-1 derivatives (as well as a broad range of potential effective doses and treatment outcomes). (Wands Factor 8). We credit Dr. Ghosh's testimony and find that there are at least millions of compounds that would fall within Efendic's definition of GLP-1 analog and even more would fall within Efendic's definition of GLP-1 derivatives. (CX 2007, ¶¶ 14-15, and CX 2029, ¶¶ 5-7).

Efendic's '802 specification provides little guidance as to suitable GLP-1 analogs and GLP-1 derivatives beyond those already disclosed in the specification. (Wands Factor 2). We agree with Efendic's statement that the '802 specification identifies "specific, preferred GLP-1 analogs and derivatives." (Paper 49, p. 17, ll. 10-12). Yet, Efendic's claims are not

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p. 1). The '346 application is said to be a child of Efendic's parent case '802, which is the application involved in this interference. Efendic responded to a prior art rejection in the '346 application by stating:

> Prior to the filing of the present Application, there was no teaching that lowering blood glucose levels in patients immediately following stroke would actually treat stroke. While there are various references discussing pre-stroke hyperglycemia as a predictor of poor outcome following a stroke (see p. 1, line 25 to p. 2, line 14, Specification), even that hypothesis was controversial at the time of filing the present Application.

(CX 2061, p. 10). The response went on to cite articles for the proposition that "the relationship between hyperglycemia and stroke outcome was controversial at best." (*Id.* at p. 12).

limited to the specific GLP-1 analogs and derivatives recited in its specification.

Efendic contends that one skilled in the art would recognize that its claimed GLP-1 analogs and derivatives contained an active fragment and that one would have understood that the active fragment referred to the ability of GLP-1 to control blood glucose through insulinotropic activity. (Paper 49, p. 15-17). Efendic contends that Dr. Ghosh's declaration failed to take this fragment into account and his testimony "is therefore worthy of no credit whatsoever." (*Id.* at p. 17, ll. 3-6). We disagree.

Dr. Beal, Efendic's expert, agreed on cross examination that he was a specialist in determining the active fragment of GLP-1. When questioned Dr. Beal testified that there may be more than one active fragment sequence and that he could not identify the active fragment sequence(s), i.e., could not identify the structure of the active fragment. (See, e.g., CX 2063, 8:17 to 9:4). Dr. Beal further testified on cross examination that "I'm not certain that research has distilled down exactly what the active fragment of the GLP-1 peptide is." (*Id.* at 9:23-25). Dr. Beal also was unable to identify what fragment he would first test to determine the active fragment. (*Id.* at 29:12 – 30:6). Dr. Beal also testified that it would not be practical to test all the possible peptides described in Efendic's specification. (*Id.* at 66:15 – 67:3).

Efendic contends that one could use known assays to determine if a compound could control blood glucose. The method of the invention is directed to "treating stroke," which Efendic's expert, Dr. Nyquist, testifies is interchangeable with the terminology "reducing mortality and morbidity after stroke." (CX 1031, ¶ 41). Dr. Beal testified on cross examination that the correlation between lowering blood glucose and reducing mortality and

morbidity after stroke had not yet been established and would need to be determined in a clinical setting. (CX 2063, 15:1 – 16:9). Dr. Beal also acknowledged that he did not know of an assay that actually shows reduction in morbidity and mortality following stroke. (*Id.* at 67:18-21).

The examples in Efendic's specification do not provide guidance as to how one of ordinary skill in the art would select potential GLP-1 analogs and derivatives containing an active fragment. (Wands Factor 3). Efendic's examples are directed to the use of GLP-1 (7-36) amide to lower glucose levels in patients with non-insulin dependent diabetes mellitus (NIDIMM), who are not suffering stroke. (CX 2001, Examples 1 and 2, and CX 2007, ¶ 31). Further, Dr. Beal acknowledged that Efendic's examples represent a preliminary trial and that additional work would need to be done to determine a reduction in mortality and morbidity after stroke for a GLP-1 treatment. (*Id.* at 16:6 – 19:6).

We conclude based on our analysis of the *Wands* factors that it would have required undue experimentation to make and use Efendic's claimed invention with GLP-1 analogs and GLP-1 derivatives throughout its scope.

c. Undue Experimentation Required to Practice the Full Scope of the Claimed "Method of Treating Stroke" with "Effective Amounts"

Coolidge contends that Efendic does not teach appropriate dosages or data from which dosages could be derived. (Paper 32, p. 4, ll. 21-22). Efendic disagrees arguing that Coolidge has failed to take into account the state of the prior art, the relative skill in the art and the amount of guidance provided by Efendic's '802 specification. (Paper 49, p. 11, l. 21 to p. 12, l. 2).

The state of the art and nature of the invention have been discussed above. We focus on the breadth of Efendic's claims, the unpredictability of the art, the lack of guidance and working examples in the specification.

Efendic's claims are directed to a method of treating stroke and Efendic's expert, Dr. Nyquist, testified that the term "treating stroke" is interchangeable with "reducing mortality and morbidity after stroke." (CX 1031, ¶ 41).

Dr. Elkind testifies on behalf of Coolidge and states that "Efendic does not provide any parameters with which to measure the effect of treatment on a stroke patient." (CX 2006, ¶ 37). Dr. Elkind concludes that, lacking defined parameters to measure after treatment, "the term 'effective amount' is meaningless." (*Id.* at ¶ 39). Dr. Ghosh, consistent with Dr. Elkind's testimony, testified that:

> Without an in vivo or in vitro functional assay to determine the effectiveness of a compound, there is no guidance to determine what an effective amount of GLP-1, GLP-1 analog, or GLP-1 derivative would be.

(CX 2007, ¶ 30).

Efendic contends that its application describes specific ranges, including a preferred range of the dosage to be administered and cites its specification as stating dosage rates of between 0.25 and 6 pmol/kg/min are suitable. (Paper 49, p. 12, ll. 6-13). Efendic fails to explain how the dosing ranges discussed in its specification limit the effective amounts administered. Of note, claim 1 requires the use of an *effective amount* and Efendic claim 5 depends indirectly upon claim 1 and limits claim 1 to administering continuously at a *rate* of administration of 0.25 to 6 pmol/kg/min.

Efendic contends that its specification provides guidance by disclosing factors relevant to determining the amounts including, sex, weight, age, stroke severity, and stroke subtype. (Paper 49, p. 12, ll. 13-15). Efendic also contends that its application discloses how much GLP-1 compound to administer in terms of a desired clinical result, controlling blood glucose. (*Id.* at p. 12, ll. 16-18). Efendic also contends that its examples involved using GLP-1 to control glucose. (*Id.* at p. 14, ll. 22-24).

On cross examination, Dr. Beal testified that the correlation between insulinotropic activity and reducing mortality and morbidity after stroke had not yet been established and would need to be determined in a clinical setting. (CX 2063, 15:1 – 16:9). Dr. Beal also testified that he is unaware of an assay, clinical or otherwise, that actually shows a reduction in morbidity and mortality following stroke. (*Id.* at 67:18-21).

Based upon the facts presented, we make the following findings. The claimed subject matter, effective amounts to treat stroke, are broad (Wands Factor 8). The art was unpredictable as the correlation between insulinotropic activity and reducing mortality and morbidity after stroke was not established and would require clinical testing. (Wands Factor 7). The specification lacks guidance commensurate with the scope of the invention claimed. (Wands Factor 2). The quantity of experimentation necessary was high as the correlation between insulinotropic activity and reducing mortality and morbidity after stroke had not been established, there was no known assay for reducing mortality and morbidity after stroke and the claimed invention does not require a specific set of parameters with which to measure the effect of the treatment on a patient. (Wands Factor 1).

In addition to our conclusion of undue experimentation with respect to GLP-1 analogs and derivatives, we also conclude that it would have required

undue experimentation to make and use Efendic's claimed method of treating stroke comprising administering an effective amount of the GLP-1 compounds (GLP-1, GLP-1 analogs and GLP-1 derivatives).

We ***grant*** Coolidge Motion 3.

D. Coolidge Substantive Motion 4 for Judgment Based on Lack of Written Description

Coolidge Substantive Motion 4 requests that the Board enter judgment that all of Efendic's involved claims, claims 1-11, are unpatentable to Efendic for lack of written description under 35 U.S.C. § 112, 1st paragraph. (Paper 33). Efendic opposes. (Paper 50).

Coolidge states that Efendic does not have sufficient written description for a method of treating stroke comprising an effective amount of GLP-1, GLP-1 analogs or GLP-1 derivatives. (Paper 33, p. 1, ll. 15-17). Efendic opposes Coolidge's motion. (Paper 50).

Efendic's opposition focuses on four claim terms: 1) "method of treating stroke," 2) administering an effective amount," 3) when to administer the compound, and 4) "GLP-1 analogs and GLP-1 derivatives." (Paper 50, Table of Contents). Efendic however, characterizes Coolidge's motion as follows:

> The only substantive section in Coolidge Motion 4 is devoted solely to whether there is written description support for the terms "GLP-1 analogs" and "GLP-1 derivatives." *See*, Coolidge Motion 4 at p. 4, line 16 – page 6, line 7. But, as explained in this opposition, on this topic Coolidge has chosen to disregard a key portion of the definition for the compounds of the invention and has failed to account for the knowledge of a person of ordinary skill in the art.

(Paper 50, p. 4, ll. 17-22). We follow Efendic's lead and focus our analysis

on Efendic's written description for its GLP-1 analogs and GLP-1 derivatives.

In opposing Coolidge Motion 4, Efendic only addresses Efendic claim 1 and does not separately address the patentability of each claim corresponding to the count.[22] We treat Efendic claims 1-11 as standing or falling with Efendic claim 1.

1. Legal Principles on Written Description

The purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by the inventor. *Vas Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991). The Federal Circuit has provided the following guidance regarding written description for chemical genus cases:

> A written description of an invention involving a chemical genus, like a description of a chemical species, "requires a precise definition, such as by structure, formula, [or] chemical name," of the claimed subject matter sufficient to distinguish it from other materials. *Fiers*, 984 F.2d at 1171, 25 USPQ2d at 1606; *In re Smythe*, 480 F.2d 1376, 1383, 178 USPQ 279, 284 85 (CCPA 1973) ("In other cases, particularly but not necessarily, chemical cases, where there is unpredictability in

---

[22] Efendic Opposition 4 states:

> Every limitation of this claim [claim 1] is adequately supported by the Efendic 802 application. While Coolidge alleges that all eleven Efendic claims lack sufficient written description, its arguments are limited to limitations set forth in claim 1, which are incorporated by the remaining Efendic claims. Therefore, only Efendic claim 1 need be addressed in this Opposition.

(Paper 50, p. 6, ll. 9-13).

> performance of certain species or subcombinations other than those specifically enumerated, one skilled in the art may be found not to have been placed in possession of a genus. . . .").

Regents of University of California v. Eli Lilly & Co., 119 F.3d 1559, 1568 (Fed. Cir. 1997). Additionally, a functional description of a chemical genus in an unpredictable art satisfies written description only if there is also a structure-function relationship known to those of ordinary skill in the art. *In re Wallach*, 378 F.3d 1330, 1335 (Fed. Cir. 2004).

2. One of Ordinary Skill in the Art Would Not Be Convinced that Efendic was in Possession of Treating Stroke with the Genus of GLP-1 Analogs and GLP-1 Derivatives

The evidence cited and relied upon by the parties in support of their motion, opposition and reply with respect to written description is generally the same as that relied upon for enablement, which is discussed in detail above.

Generally, as discussed above, Efendic's claims are directed to a method of treating stroke. Efendic's method administers a compound selected from a group consisting of a very large and ill-defined genus of compounds.

Coolidge contends that treating stroke is an unpredictable art and that Efendic has failed to properly describe the compounds used in its method. Specifically, Coolidge alleges that one of ordinary skill in the art would not be convinced that Efendic possessed its claimed method of treating stroke where a GLP-1 analog or GLP-1 derivative is administered to a patient. (Paper 33, p. 4, ll. 16 – p. 6, ll. 7).

Efendic opposes Coolidge's contention arguing that Efendic's specification provides a wealth of information regarding GLP-1 analogs and derivatives, including a detailed discussion of how to make potential GLP-1 analogs and derivatives. (Paper 50, p. 14, ll. 5-9). Efendic claims a treatment of stroke, which the record demonstrates to be an unpredictable field. Efendic treats stroke by administering a compound selected from the group consisting of GLP-1, GLP-1 analogs and GLP-1 derivatives. While Efendic's specification discloses structural formulas for specific GLP-1 analogs and derivatives, most of these structures are said to be "preferred" GLP-1 analogs and derivatives. Giving Efendic's claims their broadest reasonable interpretation in light of the specification we conclude that the claims compounds are not limited to those structures identified in the specification and that the compounds are selected from a genus encompassing at least millions of compounds and potentially upwards of 2 x 10^{40} compounds.

Efendic also contends that Coolidge has disregarded Efendic's disclosure that its GLP-1 analogs and derivatives are defined as having the active fragment that effects reduced mortality and morbidity after stroke is included. (*Id.* at p. 14, ll. 10-22). Efendic's active fragment definition is functional in nature. Efendic does not correlate the defined active fragment function with a particular structure nor is such a correlation known in the art.

Dr. Beal, an Efendic expert witness, agreed on cross examination that he is a specialist in determining the active fragment of GLP-1. Dr. Beal testified that there may be more than one active GLP-1 fragment. Dr. Beal testified that he could not identify the active fragment and that he wasn't certain that research had been able to determine exactly what the active GLP-1 peptide fragment was. When asked what fragment he would first test

to locate the active fragment, Dr. Beal replied he would start with GLP-1 itself. Dr. Beal also testified that he was unaware of an assay, clinical or otherwise, that actually shows a reduction in morbidity and mortality following stroke. Dr. Beal also stated that one could test potential active fragments for insulinotropic activity but acknowledged that the correlation between insulinotropic activity and reducing mortality and morbidity after stroke would need to be determined in a clinical setting.

We find that Efendic's claimed treatment of stroke administering GLP-1 analogs and derivatives lacks sufficient written description under 35 U.S.C. § 112, 1st paragraph and we grant Coolidge Motion 4.

E. Coolidge Substantive Motion 5 for Judgment Based on Lack of Definiteness

Coolidge Substantive Motion 5 requests that the Board enter judgment that all of Efendic's involved claims, claims 1-11, are unpatentable to Efendic for lack of definiteness under 35 U.S.C. § 112, 2nd paragraph. (Paper 34). Efendic opposes. (Paper 51).

We have already held Efendic's involved claims unpatentable for lack of enablement and lack of written description. Accordingly, we dismiss Coolidge Substantive Motion 5 as moot.

F. Efendic Substantive Motion 1 for Judgment Based on Anticipation

Efendic Substantive Motion 1 requests that the Board enter judgment that all of Coolidge's involved claims, claims 1-13, are

anticipated by Efendic's 6,277,819 ("819") patent. (Paper 25, p. 1, ll. 1-17). Coolidge Opposes. (Paper 54).

Efendic '819 is available under 35 U.S.C. § 102(e) as prior art against Coolidge's involved '725 patent. (Paper 25, p. 10, ll. 1-11). Efendic '819 describes a method for treating myocardial infarction ("MI"), which is the death of heart muscle tissue due to a period of ischemia. More particularly, the '819 patent relates to a method of reducing mortality and morbidity after MI by administering GLP-1 at a dose effective to normalize blood glucose to a patient in need thereof. (*Id.* at ¶ 40, admitted).

Coolidge's involved '725 claims are directed to amelioration of organ tissue injury caused by reperfusion of blood flow following a period of ischemia. Coolidge's claimed method administers an effective amount of a compound that binds to a receptor for GLP-1.

Efendic contends that Efendic '819 discloses, either expressly or inherently, the subject matter of all of the involved claims of Coolidge's '725 patent. (*Id.* at p. 9, ll. 21-23).

Efendic Substantive Motion 1 does not allege that Coolidge's claims are obvious over the prior art. Thus, we do not analyze whether Coolidge's claims are obvious over the cited prior art, in contrast to Coolidge Motion 1, which requested judgment for no interference in fact. Furthermore, we note that Efendic Substantive Motion 1 relies upon different evidence than Efendic Opposition 1. For example, Efendic Substantive Motion 1 relies upon the testimony of Drs. Kovacs and Hechtman and the '819 patent whereas Efendic Opposition 1 relies upon the testimony of Dr. Nyquist and prior art, such as de Courten Myers (CX 2043) and Nauck (EX 1038).

Coolidge opposes Efendic Substantive Motion 1 contending that Efendic failed to demonstrate that one of ordinary skill in the art following the teachings of the '819 patent would necessarily ameliorate organ tissue damage due to reperfusion injury. (Paper 54, p. 2, l. 14 to p. 5, l. 13). We follow Coolidge's lead and focus our analysis on whether Efendic has demonstrated that following the teachings of the '819 patent would necessarily lead to amelioration of tissue injury due to reperfusion.

In opposing Efendic Motion 1, Coolidge does not separately address the patentability of each claim corresponding to the count. We treat Coolidge claims 1-13 as standing or falling with Coolidge claim 1.

1. Legal Principles on Anticipation

Anticipation under 35 U.S.C. § 102 is a question of fact. *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987).

The doctrine of inherency may not be used to establish anticipation unless a prior inherency can be established as a certainty. Probabilities or possibilities will not be sufficient to establish an inherent event. *In re De Jarlais*, 233 F.2d 323, 329 (CCPA 1956). As stated by the CCPA:

> Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. [Citations omitted.] If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to

be well settled that the disclosure should be regarded as sufficient.

In re Oelrich, 666 F.2d 578, 581 (CCPA 1981) (quoting *Hansgirg v. Kemmer*, 102 F.2d 212, 214, (CCPA 1939)).

2. Evidence Relied Upon

We make the following findings concerning the evidence submitted and relied upon by the parties in connection with Coolidge Motion 1.

a. Efendic U.S. Patent No. 6,277,819

111) Efendic's '819 patent issued on August 21, 2001, based upon U.S. Application 08/915,918, filed **August 21, 1997**. (EX 1002, front page).

112) Coolidge's '725 patent is based on U.S. Application 09/302,596, filed April 30, 1999, which claims benefit of the filing date of U.S. Provisional Application No. 60/103,498, filed **October 8, 1998**. (EX 1001, front page).

113) The '819 patent contains a summary of the invention section that characterizes the '819 invention as follows:

> The present invention provides a method of reducing mortality and morbidity after myocardial infarction, comprising administering a compound from the group consisting of GLP-1, GLP-1 analogs, GLP-1 derivatives, and pharmaceutically-acceptable salts thereof, at a dose effective to normalize blood glucose, to a patient in need thereof.

(EX 1002, col. 3, ll. 13-18).

114) The '819 patent defines GLP-1 as GLP-1 (7-37). (*Id.* at col. 3, ll. 50-51).

115) The '819 patent defines its patient in need of treatment as follows:

> A patient in need of the compounds used in the present invention is one who is in the acute phase of myocardial infarction, and who also is incapable of auto-regulation of blood glucose.

(*Id.* at col. 12, ll. 33-36).

116) The '819 patent describes the dose of GLP-1 to be administered as follows:

> The dose of GLP-1, GLP-1 analog, or GLP-1 derivative effective to normalize a patient's blood glucose level will depend on a number of factors, among which are included, without limitation, the patient's sex, weight and age, the severity of inability to regulate blood glucose, the underlying causes of inability to regulate blood glucose, whether glucose, or another carbohydrate source, is simultaneously administered, the route of administration and bioavailability, the persistence in the body, the formulation, and the potency. Where administration is continuous, a suitable dosage rate is between 0.25 and 6 pmol/kg body weight/min, preferably from about 0.5 to about 1.2 pmol/kg/min. Where administration is intermittent, the dose per administration should take into account the interval between doses, the bioavailability of GLP-1, GLP-1 analog, or GLP-1 derivative, and the level needed to effect normal blood glucose. It is within the skill of the ordinary physician to titrate the dose and rate of administration of GLP-1, GLP-1 analog, or GLP-1 derivative to achieve the desired clinical result.

(*Id.* at col. 12, ll. 43-60).

117) The '819 patent contains nineteen (19) claims with claims 1, 13, 14, 15, 16, 17, 18 and 19 being independent claims. (EX 1002).

118) Each of Efendic's independent claims recites "a method of reducing mortality and morbidity after myocardial infarction . . . " (*Id.*).

119) Each of Efendic's independent claims requires administering GLP-1, GLP-1 analog or GLP-1 derivative compound "at a dose effective to normalize blood glucose." (*Id.*).

b. Declaration of Dr. Herbert Hechtman

120) Dr. Hechtman testifies in support of Efendic's motion for judgment based on prior art. (Paper 25, Exhibit List).

121) Dr. Hechtman received an AB from Princeton in 1955 and in 1960 received an M.D. from Harvard University. (EX 1006, ¶ 4).

122) Dr. Hechtman practiced surgery at numerous hospitals from 1968-1999. (*Id.* at ¶ 7).

123) Dr. Hechtman is an author or coauthor of over 550 original reports, reviews, chapters and abstracts and his research interests include ischemia and reperfusion injury. (*Id.* at ¶ 9).

124) We find that Dr. Hechtman is sufficiently qualified to give testimony with respect to the particular facts and techniques known by the average person working in the arts of myocardial infarction and reperfusion injury.

125) Dr. Hechtman testifies that the term "reperfusion" encompasses a

range of flow conditions including modest continuation of flow to restoration of flow to ischemia-affected tissue. (EX 1006, ¶ 27).

126) Myocardial infarction ("MI") means the death of myocardial tissue following a period of ischemia. (*Id.* at ¶ 17).

127) Reperfusion always accompanies MI because some flow always returns to the ischemia-affected tissue through collateral vasculature. (*Id.* at ¶ 29).

128) Dr. Hechtman testifies that:

> Although reperfusion is beneficial for an MI patient, when blood flow returns to ischemic tissue reperfusion injury ***generally*** occurs.

(*Id.* at ¶ 32, emphasis added).

129) Dr. Hechtman also testifies that:

> Reperfusion and reperfusion injury ***always*** occur during an MI event. As soon as a myocardial ischemic event occurs, reperfusion occurs on some level. In other words, for an MI event, it is impossible to separate, except in experimental circumstances, the time periods for ischemia and reperfusion.

(*Id.* at ¶ 36, emphasis added).

130) Dr. Hechtman concludes that treating MI with GLP-1 necessarily "includes" treating the patient for reperfusion injury as described in the Coolidge '725 patent. (*Id.* at ¶ 38).

c. Declaration of Dr. Richard Kovacs

131) Dr. Kovacs testifies in support of Efendic's motion for judgment based on prior art. (Paper 25, Exhibit List).

132) Dr. Kovacs received a BA in Biology from the University of Chicago in 1976 and an MD from the University of Cincinnati in 1980. (EX 1005, ¶ 4).

133) Dr. Kovacs was a resident in Internal Medicine and later a cardiology fellow at the Indiana University School of Medicine. (*Id.* at ¶ 5).

134) Dr. Kovacs was Chief Medical Resident and Chief Cardiology Fellow at the Indiana University School of Medicine in 1986 and in 1990 became Director of Medical Research at Methodist Hospital of Indiana. (*Id.* at ¶¶ 6-7).

135) In 2000, Dr. Kovacs became a Senior Research Physician with Eli Lilly and Company, the real party in interest for Efendic. (*Id.* at ¶ 8).

136) Dr. Kovacs returned full time to the faculty of Indiana University School of Medicine in 2003. (*Id.* at ¶ 9).

137) Dr. Kovacs has performed consulting work for Eli Lilly while working at the Indiana University School of Medicine. (CX 2041, *e.g.*, 9:2-24:1).

138) We find that Dr. Kovacs is sufficiently qualified to give testimony

with respect to the particular facts and techniques known by the average person working in the arts of myocardial infarction and reperfusion injury.

139) Dr. Kovacs testifies that Coolidge does not set forth a clinical definition of reperfusion injury but instead broadly defines reperfusion injury in terms of biochemical mechanisms that may play a role in reperfusion injury. (*Id.* at ¶ 36, citing, e.g., '725 at col. 4, ll. 17-21).

140) The '725 patent discloses the following at col. 4, ll. 17-21:

> The mechanisms underlying [myocardial] stunning are complex, but an emerging consensus is that this is likely related to intracellular acidosis leading to dysfunctional sarcolemmal $Ca2^+$ pumps and cytosolic $Ca2^+$ overload.

141) Dr. Kovacs testifies that:

> Some level of reperfusion and some level of reperfusion injury (as that term is described by the Coolidge 725 patent) always occur in patients during an MI event.

(*Id.* at ¶ 38).

142) Dr. Kovacs testifies that treating a patient with MI, as described by the '819 patent, would necessarily treat injury caused by reperfusion as described by the '725 patent as follows:

> 41. Any treatment that is administered systemically to a patient having an acute myocardial infarction will be present across the continuum of ischemia and reperfusion.
>
> 42. Therefore, assuming GLP-1 is effective at treating reperfusion injury as stated in the Coolidge 725 patent, it would be impossible to treat a patient having an acute myocardial infarction with GLP-1 without also treating the patient with

GLP-1 for reperfusion injury (as described by the Coolidge 725 patent).

43. If one is treating a patient having an acute myocardial infarction with GLP-1 as described in the Efendic 819 patent, one is necessarily treating injury caused by reperfusion as described in the Coolidge 725 patent.

143) On cross examination, Dr. Kovacs testified that it was possible that you wouldn't ameliorate reperfusion injury if one of ordinary skill in the art followed the teachings of Efendic's '819 patent:

Q. Isn't it true, Doctor, that if you give a diabetic patient experiencing an MI enough GLP-1 to control blood glucose levels, according to the teaching of Exhibit 1002 [Efendic '819], you may not be giving them enough GLP-1 to ameliorate injuries due to reperfusion, even if you take into account the teaching of the 725 patent, which is Exhibit 1001?
A. That's possible.

(CX 2041, 158:2-10).

144) Dr. Kovacs again testified on cross examination that it was possible that you wouldn't ameliorate reperfusion injury if one of ordinary skill in the art followed the teachings of Efendic's '819 patent:

Q. What I want to be specific on is if you follow the teachings of the '819 patent and you base the presumptions or the assumptions that you have based by looking at the '725 patent to arrive at your declaration, isn't it still true that you could follow the teach[ing] of the '819 patent and still not administer enough GLP-1 to ameliorate the injuries due to reperfusion?

A. Without, again, going into chapter and verse, there are - - there is some discussion of dosing to blood glucose levels. But

it is possible. You're correct, it's possible that you could not dose to the desired effect of the amelioration of tissue injury if you dosed to blood glucose levels.

Q. Does the '819 patent teach you to dose to any other level.

A. Not that I recall.

(CX 2041, 160:2-19).

d. Declaration of Dr. Steven Marso

145) Dr. Marso testifies in support of Coolidge's opposition to Efendic's motion for judgment based on prior art. (Paper 54, Exhibit List).

146) Dr. Marso received an M.D. degree from the University of Kansas School of Medicine in 1993, was Board Certified in internal medicine in 1996 and Board Certified in cardiovascular disease in 1999 and further certified in interventional cardiology in 2000. (CX 2037, ¶ 5).

147) Dr. Marso has been invited to serve as a member of Amylin (Coolidge's real party in interest) Cardiovascular Scientific Advisory Board for which he will be compensated. (*Id.* at ¶ 9).

148) We find that Dr. Marso is sufficiently qualified to give testimony with respect to the particular facts and techniques known by the average person working in the arts of myocardial infarction and reperfusion injury.

149) Dr. Marso testifies that reperfusion injury refers to tissue damage caused when blood supply returns to the tissue after a period of ischemia. (*Id.* at ¶ 18).

150) Dr. Marso testifies that reperfusion injury can occur without reperfusion injury as follows:

> Reperfusion injury can occur without reperfusion injury. Prompt reperfusion can result in little to no biochemical evidence of myocardial infarction and hence no measurable reduction in the left ventricular function.

(*Id.* at ¶ 21).

151) Dr. Marso also testifies that reperfusion injury may not be clinically relevant. (*Id.* at ¶ 19).

152) On cross examination, Dr. Marso elaborated on reperfusion injury:

> A. I can tell you that there is clinical evidence to suggest that in the presence of reperfusion, that reperfusion injury happens some of the time. There is evidence in the clinical world that reperfusion injury doesn't happen with effective and adequate reperfusion in people with MI. So I can't - - if the question is the frequency with which it happens, I can't answer. I can tell you with confidence it happens clearly some of the time and I can tell you with confidence it clearly doesn't happen some of the time in people with reperfusion in the setting of an acute myocardial infarction.
>
> Q. Okay. And so when you're saying it happens some of the time and it doesn't happen some other time, that's from the clinical perspective?
>
> A. It is. It is - - it is the only way we can recognize reperfusion injury. And the current clinical arena is very dependent upon our imaging capabilities, upon our ability to

detect no reflow, upon our ability to detect malignant arrhythmias. So, yes, our ability to detect reperfusion injury is a function of our ability and our tools to identify it clinically.

(EX 1043, 24:20 – 25:18).

153) Dr. Marso also testified that clinically significant reperfusion injury means clinical evidence for reperfusion injury:

Q. In the circumstance described here, namely that reperfusion can occur without reperfusion injury is very rare, isn't it:

A. No. Like I said, I can't agree with you on that. Reperfusion can occur without evidence of reperfusion injury, clinically, commonly. The specific of reperfusion injury, reperfusion within the absence of myonecrosis in the segment – ST – segment elevation MI, heading it off at the pass, as you had mentioned, is uncommon, but reperfusion can occur without reperfusion injury or evidence of reperfusion injury in other situations that is more common.

Q. In your earlier answer, you had used the term "clinically significant reperfusion injury". Is that what you are referring to now?

A. If I – I would have to have it read back if I said clinically significant or that term, but clinically identifiable or evidence for reperfusion injury is maybe what I meant to say or what I was referring to, clinical evidence for reperfusion injury.

(*Id.* at 27:13 - 28:8).

3. Efendic Fails to Demonstrate by a Preponderance of the Evidence that Reperfusion Necessarily Occurs with MI

The three experts, Drs. Hechtman, Kovacs and Marso agree that

reperfusion will occur during an MI event. The experts however, provide varying accounts as to whether reperfusion injury will necessarily occur with an MI event.

Dr. Hechtman testifies that when blood flow returns to ischemic tissue "reperfusion injury generally occurs." (EX 1006, ¶ 32). Yet, Dr. Hechtman also testifies that "reperfusion and reperfusion injury always occur during an MI event." (*Id.* at ¶ 36). Dr. Hechtman does not direct our attention to credible evidence of record to support his conclusion that reperfusion always occur during an MI event. Further, Dr. Hechtman does not reconcile the apparent discrepancy in his testimony on the frequency of reperfusion injury with an MI event, "generally" versus "always."

Dr. Kovacs testifies that some level of reperfusion injury, as that term is defined by Coolidge's '725 patent, always occurs in patients during an MI event. (EX 1006, ¶ 38). Like Dr. Hechtman, Dr. Kovacs does not direct our attention to credible evidence of record to support his conclusion that reperfusion injury always occurs. Additionally, Dr. Kovacs appears to have relied upon an incorrect definition of reperfusion injury. Specifically, Dr. Kovacs states that Coolidge "does not set forth a clinical definition of reperfusion injury." (*Id.* at ¶ 36). Dr. Kovacs then cites Coolidge '725, col. 4, ll. 17-21 as defining reperfusion injury by biomechanical mechanisms. (*Id.*). The cited portion of Coolidge provides that:

> The mechanisms underlying [myocardial] stunning are complex, but an emerging consensus is that this is likely related to intracellular acidosis leading to dysfunctional sarcolemmal $Ca2^+$ pumps and cytosolic $Ca2^+$ overload.

Dr. Kovacs fails to provide a sufficient basis for concluding that the above quoted portion defines "reperfusion injury" as occurring any time the "likely

related" biomechanical mechanisms occur. Indeed, Dr. Kovacs acknowledges that the process of reperfusion injury was not fully understood in 1996 and still is not entirely understood. (*Id.* at ¶ 35).

Dr. Marso testifies that reperfusion can occur without reperfusion injury and cites Antman EM, *et al.* (CX 2033), p. e120, col. 2, ll. 8-10, as supporting his conclusion. The cited portion of Antman merely states that fibrinolytic therapy can occasionally abort MI and reduce mortality. As such, we find that Antman fails to provide credible and sufficient evidence to support Dr. Marso's conclusion.

We find that the experts, Drs. Hechtman, Kovacs and Marso, have failed to provide sufficient and credible evidence to support their conclusions regarding the frequency of reperfusion injury during an MI event.[23] All three however, agree that reperfusion injury may occur during an MI event. Based upon the record provided, we find that reperfusion injury may occur but not necessarily occur during an MI event. *Cf.*, *Rohm & Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997)(Nothing in the rules or in jurisprudence requires trier of fact to credit unsupported or conclusory assertions).

4. Efendic Fails to Demonstrate by a Preponderance of the Evidence that One of Ordinary Skill in the Art Following the Teachings of Efendic's '819 Patent would Necessarily Ameliorate Reperfusion Injury

Efendic states that Efendic '819 discloses the same mechanism for

[23] Both parties have alleged that their opponent's expert(s) lack credibility (apparently both parties realized that the experts failed to provide sufficient supporting documentation for their conclusions). These allegations are discussed in a separate section below.

GLP-1 treatment as disclosed by Coolidge '725. (Paper 25, p. 13, l. 6 to p. 14, l. 18). Efendic contends that its GLP-1 treatment for MI cannot be used to treat MI without also treating reperfusion injury. (*Id.* at p. 12, ll. 2-5 and p. 14, ll. 17-18). Indeed, Efendic's reply alleges that Dr. Kovacs testified on direct and cross examination that treating MI with GLP-1 ameliorates reperfusion injury 100% of the time. (Paper 71, p. 4, ll. 8-10). We hold otherwise.

Efendic cites Dr. Kovacs' cross examination testimony at page 89 lines 15-19 as supporting its position. Efendic is correct that Dr. Kovacs initially stated that following the teachings of Efendic '819 one would treat reperfusion injury 100% of the time. When questioned about this statement, Dr. Kovacs acknowledged that "I have made an assumption." (CX 2041, 89:23). Further, later in the cross examination, Dr. Kovacs twice admitted that it was possible that one could follow the teachings of Efendic '819 and not ameliorate reperfusion injuries as required by Coolidge's claims. (*Id.* at 158:2-10 and 160:2-19). Specifically, Dr. Kovacs acknowledged that Efendic '819 doses to blood glucose levels (normalize a patients glucose levels). Dr. Kovacs also stated that it is possible that you could not dose to the desired effect of ameliorating tissue injury caused by reperfusion if you followed the teachings of Efendic '819 and dosed to blood glucose levels.

Efendic also argues that Coolidge has admitted against interest that ameliorating reperfusion injury is inherent in treating MI with GLP-1. (Paper 71, p. 6, l. 22 to p. 8, l. 16). For example, Efendic cites material fact 38a as supporting its position as well as Coolidge Opposition 2. Material fact 38a is merely a statement that Coolidge's provisional application and utility application claim methods of administering GLP-1 to patients experiencing ischemia and that MI is a form of ischemia. (Paper 71, ¶ 38a).

This is not an "admission" that following the teachings of Efendic '819 would inherently ameliorate reperfusion injury. Similarly, Coolidge Opposition 2 merely recites that "what Efendic concedes" is that administering GLP-1 to a patient experiencing MI will necessarily treat reperfusion injury. (Paper 55, p. 3, ll. 13-17). Thus, Coolidge is merely directing the Board's attention to an alleged discrepancy in Efendic's positions taken in support of Efendic Motions 1 & 2 and is not an "admission" that Efendic is correct in asserting that administering GLP-1 to an MI patient will inherently treat reperfusion injury.

Efendic also contends that Coolidge "in its desperation to distinguish its patent from the prior art, admitted that over half of the claimed dose range of the Coolidge 725 claims is inoperable." (Paper 71, p. 10, n. 2). Efendic cites material facts 158-160 as support for its contention. Material facts 158-160 concern effective dosing rates for continuous administration. Efendic blurs the line between effective dosage rate (amount per unit time) and effective amount. For example, a patient dosed for two minutes will receive twice the "effective amount" as compared to a patient dosed at the same rate for one minute. Thus, consistent with Dr. Kovacs cross examination testimony, Efendic and Coolidge's treatments can employ the same dosing rates but require different effective amounts to achieve their desired effects.

We credit Dr. Kovacs' cross examination testimony that, following the teachings of Efendic '819, one of ordinary skill in the art could dose a patient at a level to control blood glucose to treat MI and not achieve a desired effect of ameliorating reperfusion injury.

5. Witness Credibility

Each party has attacked a witness for the opponent's as lacking credibility. Specifically, Efendic states that Dr. Marso's declaration is "irrelevant" because it allegedly fails to address the terms "reperfusion injury" and "reperfusion" as those terms were defined in Coolidge's '725 patent. (Paper 71, p. 4, l. 16 to p. 6, l. 8). Coolidge alleges that Dr. Kovacs testimony is entitled to little if any weight due to "potential bias." (Paper 54, p. 5, l. 14 to p. 7, l. 5).

Coolidge contends that Efendic belatedly informed Coolidge and the Board of Dr. Kovacs "deep involvement" with Lilly. While the full extent of Dr. Kovacs involvement may not have been clear from Dr. Kovacs initial declaration (EX 2005) we find ***no credible evidence*** to support a finding that Efendic intentionally sought to hide Dr. Kovacs involvement with Lilly. Further, we have reviewed Dr. Kovacs testimony and find no credible evidence of bias.

Efendic contends that Dr. Marso has failed to properly review the Coolidge '725 patent in detail and that his testimony is directed to terms and concepts that are not limitations in Coolidge's claims. (Paper 71, p. 4, ll. 17-22). Coolidge is correct that Dr. Marso failed to read the entire '725 patent. The '725 patent however, contains numerous sections that are not relevant to the issues raised in this proceeding. For example,'725 columns 6 and 7 disclose GLP-1 mimetics and fragments that can be used in the invention as well as methods for synthesizing GLP-1 like polypeptides. Thus, the focus is whether Dr. Marso failed to understand the teachings of the '725 patent with respect to the issues of concern.

Dr. Marso testifies that in MI, reperfusion injury may not be clinically relevant. (CX 2037, ¶ 19). Efendic contends that the reference to "clinically relevant" is at odds with the '725 patent. During cross examination, Dr. Marso elaborated on his use of the term "clinical" and stated that he uses the term to mean clinical evidence for reperfusion injury. (EX 1043, 27:13 - 28:8). Efendic does not explain why Dr. Marso's definition is inconsistent with the broadest reasonable interpretation of the term "reperfusion injury." Additionally, Efendic's expert, Dr. Kovacs, testified that "[t]he Coolidge 725 patent does not set forth a clinical definition of reperfusion injury." (EX 1005, ¶ 36). Hence, it appears that one of ordinary skill in the art would look to the '725 patent for a "clinical" definition of reperfusion injury. Based upon the evidence provided, we conclude that Efendic has failed to demonstrate that Dr. Marso's testimony is so lacking in credibility that it is "irrelevant."

6. Efendic Failed to Meet its Burden of Proof

Efendic, as the moving party, bears the burden of proving that they are entitled to the relief requested. We conclude that Efendic has failed to meet its burden. Specifically, Efendic has failed to demonstrate by a preponderance of the evidence that a natural result flowing from the operation of its method of treating MI would result in Coolidge's claimed amelioration of reperfusion injury. Specifically, Efendic has failed to demonstrate that its unsupported expert testimony is more credible than that of Coolidge's unsupported expert testimony on the issue of whether an MI patient will necessarily have reperfusion injury. Further, consistent with Coolidge's expert testimony, Efendic own expert, Dr. Kovacs, acknowledged on cross examination that one could follow the teachings of Efendic '819 but failed to administer an effective amount of GLP-1 to

ameliorate reperfusion injury. The possibility that, under a given set of circumstances, amelioration of reperfusion injury may result from following the '819 patent is not enough to demonstrate inherency. We conclude that Efendic has failed to demonstrate that Efendic '819 anticipates Coolidge's involved '725 claims.

Efendic Motion 1 is ***denied.***

G. Coolidge Miscellaneous Motion 9 to Exclude Dr. Hechtman's and Dr. Nyquist's Testimony

Coolidge requests that the declaration testimony of Dr. Hechtman (EX 1006) and Dr. Nyquist (EX 1031) be excluded on the grounds that:

> [T]he testimony is offered as the testimony of an expert on a subject to which the declarant has not documented expertise, and as to which the expert has not applied a generally approved methodology of analysis, all in violation of Federal Rule of Evidence 702.

(Paper 79, p. 1, ll. 4-7). Efendic opposes. (Paper 80).

Coolidge's motion fails to demonstrate that the testimony of Drs. Hechtman and Nyquist are so devoid of credibility that they should be excluded from the record. Essentially, Coolidge's contentions go to the weight that should be accorded to their testimony. Further, as set forth in the relevant findings of fact above, we have reviewed the qualifications of the disputed declarants and found that they are qualified to testify as to the knowledge possessed by one of *ordinary* skill in the respective arts for which they have testified.

Additionally, Coolidge's motion fails to identify a timely objection to the declarations. The declarations of Drs. Hechtman and Nyquist identified their respective qualifications and the arts to which their testimony was directed. Coolidge could have, but did not, object within the required five business days of service of the declarations. 37 C.F.R. § 41.155(b)(1).

Coolidge Miscellaneous Motion 9 is ***denied.***

H. Efendic Lacks Standing to Continue Interference and Remaining Motions are Dismissed as Moot

We have granted Coolidge's motions for judgment for lack of written description and lack of enablement against all of Efendic's involved claims. Unpatentability for lack of written description of an involved application claim(s) is a threshold issue that deprives an opponent of standing in the interference. 37 C.F.R. § 41.201. Accordingly, the Board enters judgment against senior party Efendic and will not continue the proceeding. Judgment will be entered concurrent with this decision in a separate paper against Efendic. Since no there is priority phase in this interference, there is no occasion to file motions associated with that phase.

Coolidge Motion 7 attacks Efendic's accorded priority benefit. (Paper 35). Coolidge Motion 8 seeks to substitute a count. (Paper 36). Efendic Motion 2 attacks Coolidge's accorded priority benefit. (Paper 26). These three motions concern the scope of the interference and dates of constructive reductions to practice. As there is no priority contest in this interference, these motions are dismissed as moot.

V. ORDERED

Based upon the evidence identified in the record, it is:

Ordered that Coolidge Substantive Motion 1, which moves for no interference-in-fact, is ***denied.***

Further Ordered that Coolidge Substantive Motion 2 for judgment based on § 135(b)(1) is ***denied.***

Further Ordered that Coolidge Substantive Motion 3 for judgment based on lack of sufficient enablement is ***granted.***

Further Ordered that Coolidge Substantive Motion 4 for lack of sufficient written descriptive support is ***granted.***

Further Ordered that Coolidge Substantive Motion 5 for judgment based on lack of definiteness is dismissed as ***moot.***

Further Ordered that Coolidge Substantive Motion 7 attacking Efendic's accorded priority benefit is dismissed as ***moot.***

Further Ordered that Coolidge Substantive Motion 8 to substitute a count is dismissed as ***moot.***

Further Ordered that Coolidge Miscellaneous Motion 2 (sic 9) to exclude testimony is ***denied.***

Further Ordered that Efendic Substantive Motion 1 for judgment based on prior art is ***denied.***

Further Ordered that Efendic Substantive Motion 2 attacking Coolidge's accorded priority benefit is dismissed as ***moot.***

Further Ordered that Efendic Substantive Motion 3 to redefine the interfering subject matter in response to Coolidge's § 135(b)(1) motion is dismissed as ***moot.***

Opinion concurring in part and dissenting in part by TORCZON, *Administrative Patent Judge*.

I concur in the decision except for the finding of lack of written description. The problem is one of scope of enablement, especially with respect to the GLP-1 derivatives. This lack of enablement does not, however, obscure what Efendic says it possessed all along.

cc (electronic filing):

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